CIC Pro™ Clinical Information Center

Operator's Manual

Software Version 4.1

2001099-183 Revision A

GE Medical Systems
Information Technologies

gemedicalsystem.com

NOTE:

The information in this manual only applies to CIC Pro Clinical Information Center software version 4.1. It does not apply to earlier software versions. Due to continuing product innovation, specifications in this manual are subject to change without notice.

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CE Marking Information

CE

Compliance

The CIC Pro Clinical Information Center bears CE mark CE-0459 indicating its conformity with the provisions of the Council Directive 93/42/EEC concerning medical devices and fulfills the essential requirements of Annex I of this directive. The product is in radio-interference protection class A in accordance with EN 55011.

The country of manufacture can be found on the equipment labeling.

The product complies with the requirements of standard EN 60601-1-2 “Electromagnetic Compatibility - Medical Electrical Equipment”.

The CE marking prescribed above is only found on the equipment labeling of the 230V European equipment. Only applicable equipment will bear the CE marking.

The safety and effectiveness of this device has been verified against previously distributed devices. Although all standards applicable to presently marketed devices may not be appropriate for prior devices (i.e. electromagnetic compatibility standards), this device will not impair the safe and effective use of those previously distributed devices. See user’s information.

CE Marking Information Exceptions

EMC: Immunity Performance

Users should be aware of known RF sources, such as radio or TV stations and hand-held or mobile two-way radios, and consider them when installing a medical device or system.

Be aware that adding accessories or components, or modifying the medical device or system may degrade the EMI performance. Consult with qualified personnel regarding changes to the system configuration.

Specified Electromagnetic Environment.

The CIC Pro and ApexPro server is suitable for use in the specified electromagnetic environment. The customer and/or the user of the CIC Pro and ApexPro server should assure that it is used in an electromagnetic environment as described below:

CE Exception Table		
EN60601-1-2 Clause 36	**Exception**	**Electromagnetic Environment Guidance**
36.202.1 Immunity: ESD	Direct - Discharges of 6 KV or greater to the rear I/O connector area may cause the system to lock up, thus experiencing loss of data and loss of functionality. Operator intervention may be required. Likelihood of occurrence: Remote During testing there were 2 occurrences out of 1,920 discharges. The rear I/O connector area is not considered to be user accessible during normal operation.	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
36.202.3.1 Immunity: Fast Transient	Transients on the AC power line of +/- 1 KV or higher may cause momentary network packet loss (i.e. waveform and/or numeric data), thus experiencing momentary loss of data at the time of the surge.	Mains power quality should be that of a typical commercial and/or hospital environment.
36.202.3.2 Immunity: Fast Surges	Surges on the AC power line of +/- 1 KV or higher may cause momentary network packet loss (i.e. waveform and/or numeric data), thus experiencing momentary loss of data at the time of the surge.	Mains power quality should be that of a typical commercial and/or hospital environment.

General Information

CE

- This manual is an integral part of the product and describes its intended use. It should always be kept close to the equipment. Observance of the manual is a prerequisite for proper product performance and correct operation and ensures patient and operator safety.

- The symbol ⚠ means ATTENTION: Consult accompanying documents.

- Information which refers only to certain versions of the product is accompanied by the model number(s) of the product(s) concerned. The model number is given on the nameplate of the product.

- The warranty does not cover damages resulting from the use of accessories and consumables from other manufacturers.

- GE Medical Systems *Information Technologies* is responsible for the effects on safety, reliability, and performance of the product, only if:

  - assembly operations, extensions, readjustments, modifications, or repairs are carried out by persons authorized by GE Medical Systems *Information Technologies*;

  - the electrical installation of the relevant room complies with the requirements of the appropriate regulations; and,

  - the Clinical Information Center is used in accordance with the instructions for use.

- All publications conform with the product specifications and applicable IEC publications on safety and essential performance of electromedical equipment as well as with applicable UL and CSA requirements and AHA recommendations valid at the time of printing.

- The quality management system complies with the international standards EN ISO 9001, ISO 13485 and EN 46001, and the Council Directive on Medical Devices 93/42/EEC.

For your notes

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1 The Basics

For your notes

About This Manual

Manual Purpose

This operator manual has been prepared by the Technical Writing staff of GE Medical Systems *Information Technologies*. It provides operating instructions for the CIC Pro with GE Medical Systems *Information Technologies* patient monitors and interface devices.

The CIC Pro can be used as a central station for viewing bedside monitored patients, telemetry patients, or both. All of the basic operating instructions for the CIC Pro itself are in this manual. Information presented in this manual applies when the type of monitoring (using either a bedside patient monitor or telemetry) is not a factor in CIC Pro operation. For information about monitoring functions that are specific to the patient monitor or telemetry system, refer to the operator's manual for that product.

Intended Audience

This manual is geared for clinical professionals. Clinical professionals are expected to have working knowledge of medical procedures, practices, and terminology as required for monitoring of critically ill patients.

Definitions

The following formats are used in this manual to highlight various web viewer features and functions.

Black text	Indicates keys on the keyboard, text to be entered, or hardware items such as buttons or switches on the equipment.
Italicized text	Indicates software terms that identify menu items, buttons, or options in various windows.
Ctrl+Esc	Indicates a keyboard operation. A (+) sign between the names of two keys indicates that you must press and hold the first key while pressing the second key once. For example, "Press **Ctrl+Esc**" means to press and hold down the **Ctrl** key while pressing the **Esc** key.
<Space>	Indicates you must press the spacebar. When instructions are given for typing a precise text string with one or more spaces, the point where the spacebar must be pressed is indicated as: **<Space>**. The purpose of the < > brackets is to ensure you press the spacebar when required.
Enter	Indicates you must press the "**Enter**" or "**Return**" key on the keyboard. Do not type "enter".

Illustrations and Names

All illustrations in this manual are provided as examples only. They may not necessarily reflect your monitoring setup or data displayed on your monitor.

In this manual, all names appearing in examples and illustrations are fictitious. The use of any real person's name is purely coincidental.

Revision History

This manual has a revision letter, located at the bottom of each page. This revision letter changes whenever the manual is updated. Revision A is the initial release of the document.

Revision	Date	Comments
A	22 April 04	Manual released with this document number to correspond with CIC Pro software version 4.1

About the Clinical Information Center

This manual addresses the operation of the Clinical Information Center.

The Clinical Information Center is referred to as the CIC Pro throughout the rest of this document.

The CIC Pro displays data from up to 16 bedside devices (patient monitors, Unity Network ID connectivity devices, telemetry transmitters, etc.) at one time. This data is collected for each individual monitor and sent to the CIC Pro via the Unity Network. Included are the bed number, the primary ECG waveform, heart rate, alarm messages, etc.

The vital sign numerics displayed are determined at the GE Medical Systems *Information Technologies* bedside monitor or the telemetry receiver cabinet. GE bedside monitors send numerics for all actively monitored parameters as well.

Control is provided through the mouse or optional touchscreen display and keyboard.

The following page shows an illustration of the CIC Pro with the various components, indicators, and controls labeled.

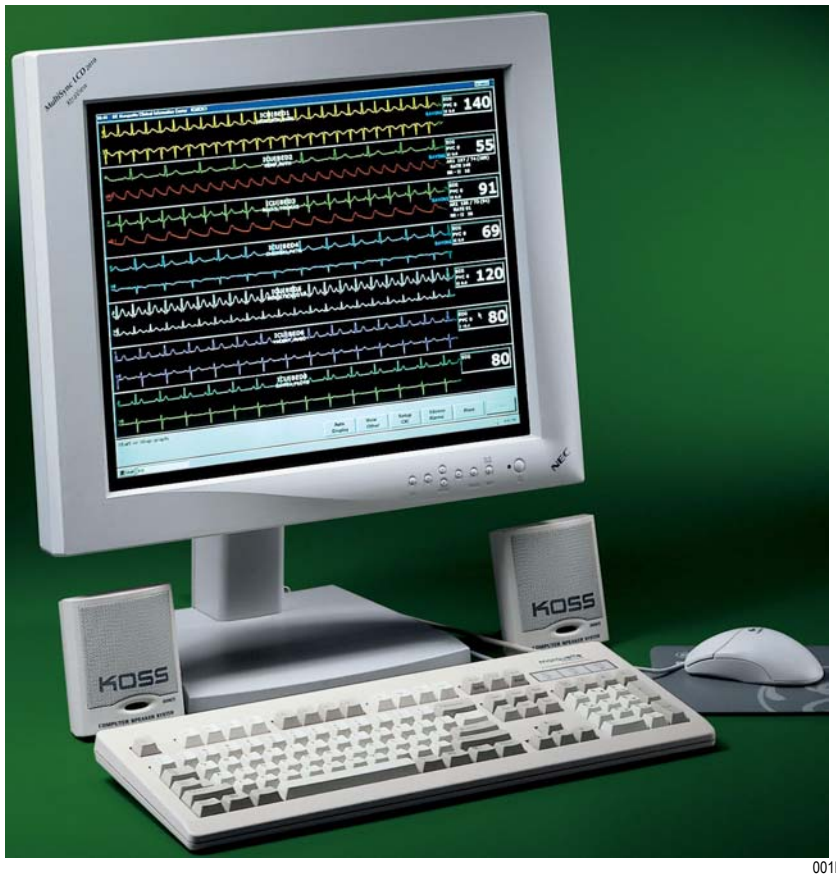
Refer to the service manual for installation instructions, including mounting and support requirements.

Telemetry Compatibility

The following issues apply with regard to compatibility with CIC Pro software version 4.1

- Due to changes in *Telemetry Unit Defaults* and *Telemetry Alarm Control* defaults, Centralscope™ central stations and previous software versions of CIC are not in-unit compatible with CIC Pro software version 4.1.
- The CD Telemetry-LAN software is compatible with all versions of CIC Pro software.
- The ApexPro telemetry system software 3.*x* is only compatible with CIC Pro software version 4.*x*.
- The ApexPro telemetry system software 1.7 and 2.*x* is compatible with CIC software version 3.*x*.
- The ApexPro telemetry system software 1.*x* is compatible with CIC software version 2.*x*.
- The ApexPro telemetry system is not compatible with versions of CIC software earlier than 2.*x*.

Front View



Clinical Information Center

The components shown in the photograph above are representative of a typical CIC Pro. They may not appear identical to the components of your system. The CIC Pro processing unit is not shown.

Power

Turning Power On

WARNING
Check the service manual for AC power requirements before installation.

When you properly connect all cables, press the power switches on the back of the processing unit and the monitor. (Refer to the service manual for information on system connections.) A green indicator light means the power is on. (Refer to the figure on the previous page.)

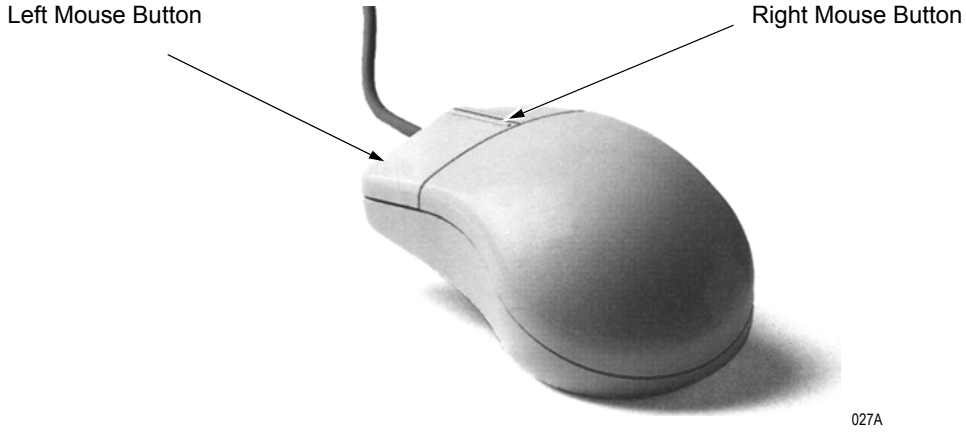
CAUTION
Do NOT load any software other than that specified by GE Medical Systems *Information Technologies* onto the CIC Pro. Installation of software not specified by GE Medical Systems *Information Technologies* may cause damage to the server or loss or corruption of data.

Controls

Operating the CIC Pro is done with the mouse, the keyboard or an optional touchscreen display.

Mouse

The mouse is the primary means of user interaction with the CIC Pro.



Mouse Pointer Shapes

Depending on your action, or the mode of operation, the mouse pointer on the CIC Pro screen shapes differently.

Arrow

The mouse pointer is arrow-shaped when you operate in user mode. When the mouse pointer is arrow-shaped, you can choose commands, highlight options, and move from window to window.

I-Beam

The mouse pointer is shaped like an I-beam when you are in a text entry field.

Cross

The mouse pointer is cross-shaped when you are operating in service mode. For more information on the CIC Pro's service mode, refer to the service manual.

Left Mouse Button

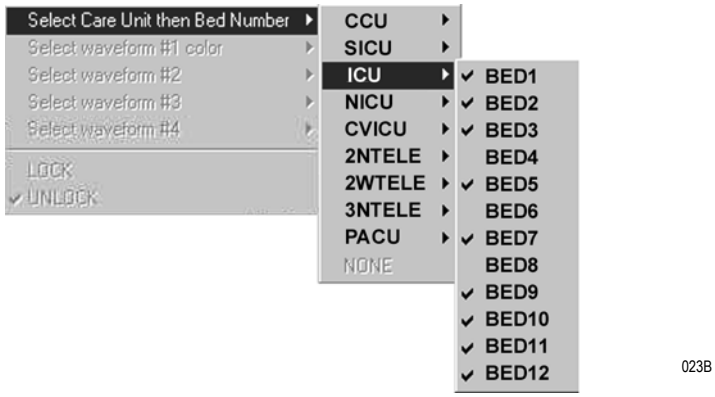
Use the left mouse button for making patient-oriented selections and initiating actions on the screen of the CIC Pro.

Right Mouse Button

Use the right mouse button for making system-oriented selections. When you press the right mouse button, the right-click menu opens.

NOTE

The right mouse button only opens the right-click menu. It does not highlight selections or initiate actions other than the items you select.



Right-Click Menu—Example

Right-click menu items available within the user mode are:

Select Care Unit then Bed Number

Select Waveform #1 color

Select Waveform #2

Select Waveform #3

Select Waveform #4

"Clicking" the Mouse

For purposes of this manual, the term "clicking" refers to positioning the mouse pointer on a selection and pressing the left mouse button.

NOTE

In situations where the right mouse button is pressed, this is specifically called out. In all other cases, assume you should press the LEFT mouse button.

Optional Touchscreen Display

The touchscreen display is an optional component of the CIC Pro. A touchscreen display (or simply touchscreen) is a screen with areas that are sensitive to touch. Essentially, any area that can be selected using the mouse pointer, can be selected using the touchscreen.

Guidelines for using the touchscreen display:

- The touchscreen feature does not function properly if tape or paper is stuck to the screen's surface.
- Do not use pencils, pens, and other sharp, pointed objects to activate the touchscreen.
- The right mouse click function cannot be used with a touchscreen display.

NOTE

Any time the manual says to "click with the mouse" you can optionally tap the display control with a finger.

Keyboard

Use the keyboard to enter patient information when you admit a patient.

To enter patient data, position the mouse pointer in the text entry field. When the mouse pointer is positioned correctly, its shape changes from an arrow to an I-beam. The I-beam mouse pointer indicates that you can type, select text, or reposition the insertion point.

Silence Alarms Keyboard Key

Press the **Silence Alarms** key located on the keyboard to silence the audible alarm tones.

107A

This sends a silence alarms command to those beds displayed in the multiple patient viewer or single patient viewer who have queued or are sounding an audio alarm on the CIC Pro.

Display Formats

NOTE

Display format is subject to licensing restrictions. Refer to the service manual for licensing information.

You can configure the CIC Pro to display patient information for one to 16 patients. Set up the display format in the *CIC Setup* window. For more information on configuring the display, refer to Chapter 4, "CIC Setup".

Terminology

For the purposes of this document, the following terms apply:

Bedside Monitoring

A bedside monitor is a stationary monitor (user-configured or factory configured).

These monitors are connected directly to the patient. They are set up with a unit name as well as a bed name (e.g., IMC-BED4). For a user-configured monitor, data is processed by an acquisition module. For a factory-configured monitor, data is processed within the monitor itself.

Telemetry Monitoring

Telemetry monitoring occurs when ECG data is transmitted by a telemetry transmitter to a telemetry receiver cabinet over an established antenna system and viewed at a designated location. The display monitor identifies a telemetry bed by placing an asterisk next to the bed name (e.g., IMC-BED4*). ECG data is processed by the telemetry receiver cabinet.

Switching Transmitters

If you wish to switch to an ApexPro transmitter from a CDT-LAN transmitter (e.g. Apex, Apex S) or vice versa, while a patient is admitted, you must:

- Discharge the patient (losing stored data).
- Switch transmitters.
- Re-admit the patient.

Monitoring stops if you switch transmitters while a patient is admitted.

Locked or Unlocked Beds

The clinical information center can be configured with the bed names either in locked or unlocked mode. When locked, the bed names are permanently assigned to specific windows. For more information, refer to "Locked/Unlocked Beds" on page 1-18.

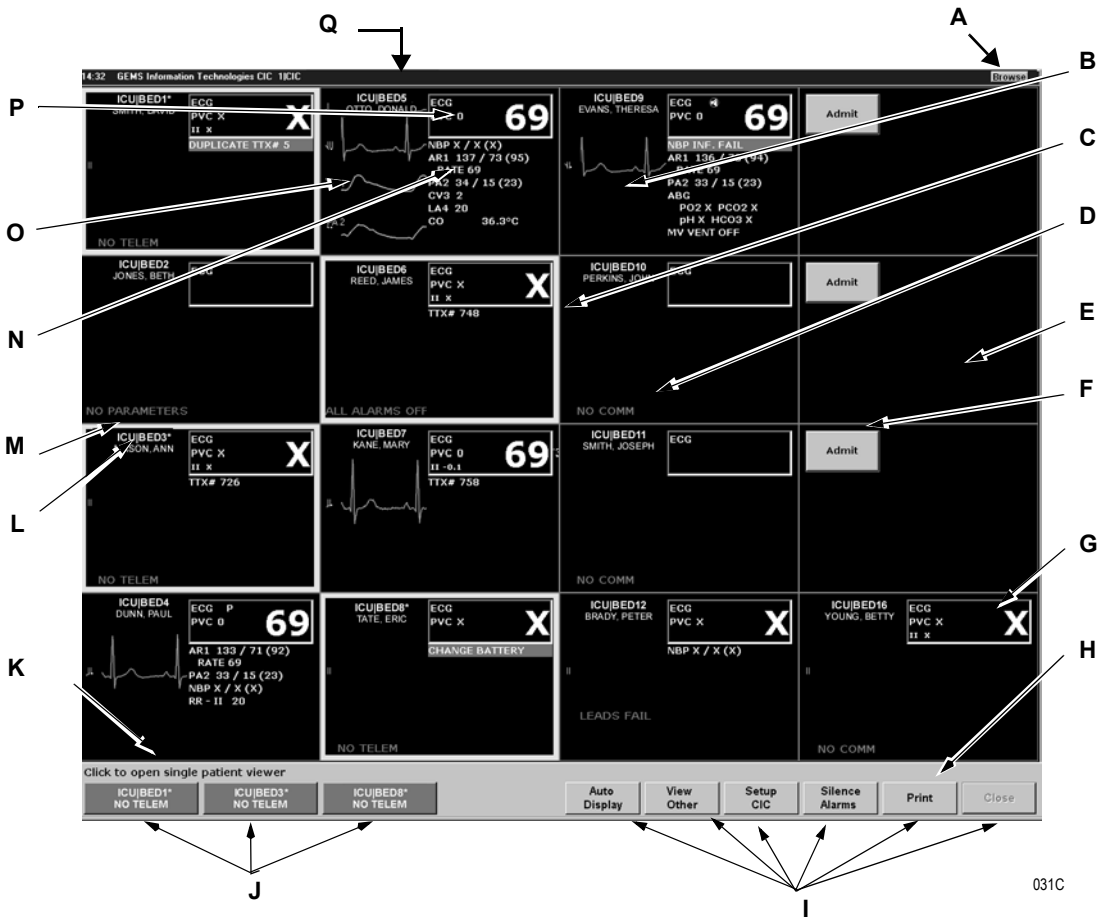
NOTE

It is possible to admit a patient to a window with a bed name that is locked to NONE. To avoid duplication of patient waveforms, a window locked as NONE should not be used to admit a patient.

Multiple Patient Viewer

The multiple patient viewer of the CIC Pro displays information for up to 16 patients along with the Main Menu buttons. (For more information on the Main Menu buttons, refer to "Main Menu Buttons" on page 1-23.)

Each patient slot contains an ECG parameter window and ECG waveform. Any default and user-selected leads appear in the waveform window. Depending on the selected display format, additional monitored parameters display for patients monitored on a GE Medical Systems *Information Technologies* bedside monitor. Refer to Chapter 4, "CIC Setup", for information on modifying display formats.



Clinical Information Center Multiple Patient Viewer

A Browse button

B Click Here to Open This Patient's Single Patient Viewer

C Colored Border Alarm Indicator

D Alarm Message

E Empty Patient Window

F Admit Button

G Click Here to Print this Patient's Waveforms

H Click Here to Open Graph All Patients Menu

I Main Menu Buttons

J Alarm Condition/Quick Access Buttons

K Message Area

L Patient Name

M Bed Name / Unit Name

N Additional Parameter Information

O Patient's Waveform Window

P Patient's ECG Parameter Window

Q Header bar: Displays time, maker of software, product name, and server name.

Telemetry and Network Bed Names

Telemetry bed names are designated with an asterisk (*) to distinguish them from bedside monitored patients.

Network beds (such as Unity Network ID) are designated with a plus sign (+).

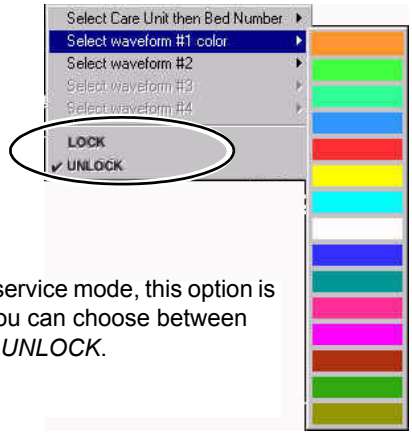
The same bed may be used for patients connected to a bedside monitor, an Unity Network ID connection, and the telemetry monitoring system. Duplicate bed numbers are not allowed, so the system adds these designators to accommodate this feature.

Table 1. Bed Name Designations

Monitor Setup	Bed Name Designation
ECG Source = Bedside Monitor	Unit Name | Bed Name
ECG Source = Telemetry	Unit Name | Bed Name*
ECG Source = Bedside Monitor with Unity Network ID connection	Unit Name | Bed Name+
ECG Source = Telemetry with Unity Network ID connection	Unit Name | Bed Name*+

Locked/Unlocked Beds

Throughout this document, references are made to “locked” beds. If a bed is locked, it means that a particular bed is allocated permanently to a particular slot on the CIC Pro and users are unable to move the bed to another slot on the CIC Pro.


Select Care Unit then Bed Number
Select waveform #1 color
Select waveform #2
Select waveform #3
Select waveform #4
LOCK
✔ UNLOCK
Within the service mode, this option is enabled. You can choose between *LOCK* and *UNLOCK*.
034B

Lock/Unlock Beds Right-Click Menu

Locking or Unlocking a Bed

NOTE
In order to lock or unlock a bed, you MUST be in service mode.

To lock or unlock a bed:

1. Position the mouse pointer in the patient's waveform window.
2. Press the right mouse button to open the right-click menu.
3. Check either *LOCK* or *UNLOCK*. The right-click menu closes, and the change takes effect immediately.

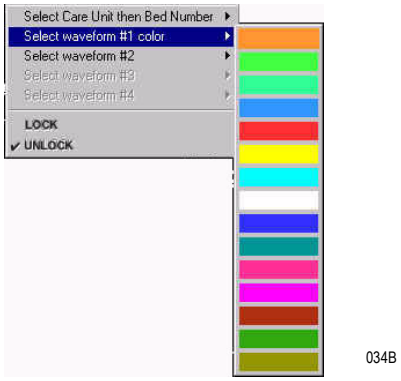
Waveform Window

Each patient's primary ECG lead displays, along with lead label and gain (if not 1x), at a display speed of 25 mm/second.

Designating Waveform Color

To designate the color for your primary ECG lead (waveform #1):

1. Position the mouse pointer in the patient's waveform window.
2. Press the right mouse button to open the right-click menu.



Set Waveform Color Right-Click Menu

3. Highlight the *Select waveform #1 color* option. The color menu opens.

4. Select and click the desired color. The right-click menu closes, and the color change takes effect immediately.

NOTE

For UNLOCKED hardwire bed (referring to monitors such as Dash, Solar, etc), the modification remains in effect regardless of a discharge and re-admit. However, the color returns to the default color setting after the bed is moved to a different position on the display.

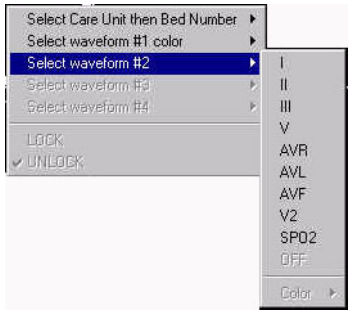
For UNLOCKED telemetry bed, the modification remains in effect until the bed is removed from the display, discharged or moved to a different position on the display. The color then returns to the default setting.

On an LOCKED bed, this color modification remains in effect until the user manually changes the color. A "discharge" does NOT return the waveform colors to the default settings.

Displaying Additional Waveforms

You can display up to three additional waveforms in a patient's waveform window. To select a second waveform for display:

1. Position the mouse pointer in the patient's waveform window.
2. Press the right mouse button to open the right-click menu.



Select Waveforms Right-Click Menu

3. Select the *Select waveform #2* option to open a list of available waveforms.
4. Highlight the desired waveform in the second position and click on it. The right-click menu closes and the waveform appears immediately.

5. Repeat Steps 1 – 3 until a maximum of 4 waveforms display in the patient's waveform slot.

NOTE

This modification remains in effect until you remove the bed from the display or to a different slot on the display.

Optional: Designate a color for the waveform you've just selected. Refer to "Designating Waveform Color" on page 1-19.

CAUTION

On an unlocked bed this color modification remains in effect until the bed is removed from the display "discharged" or until the bed is moved to a different slot on the display. At this time, the color returns to the default.

On a locked bed, this color modification remains in effect until the user changes the color manually. A "discharge" or moving the bed does not return the waveform colors to their default settings.

NOTE

If pressure waveforms are requested, they are scaled for display at the CIC Pro, but no scale indicators are provided.

ECG Parameter Window

A patient's ECG parameter window contains heart rate information, PVC/minute information, ST measurement (if available), and pace detection indicator if pace detection is enabled, as calculated by the monitoring device. If an alarm is silenced, an icon appears inside the box.

ECG Parameter Window

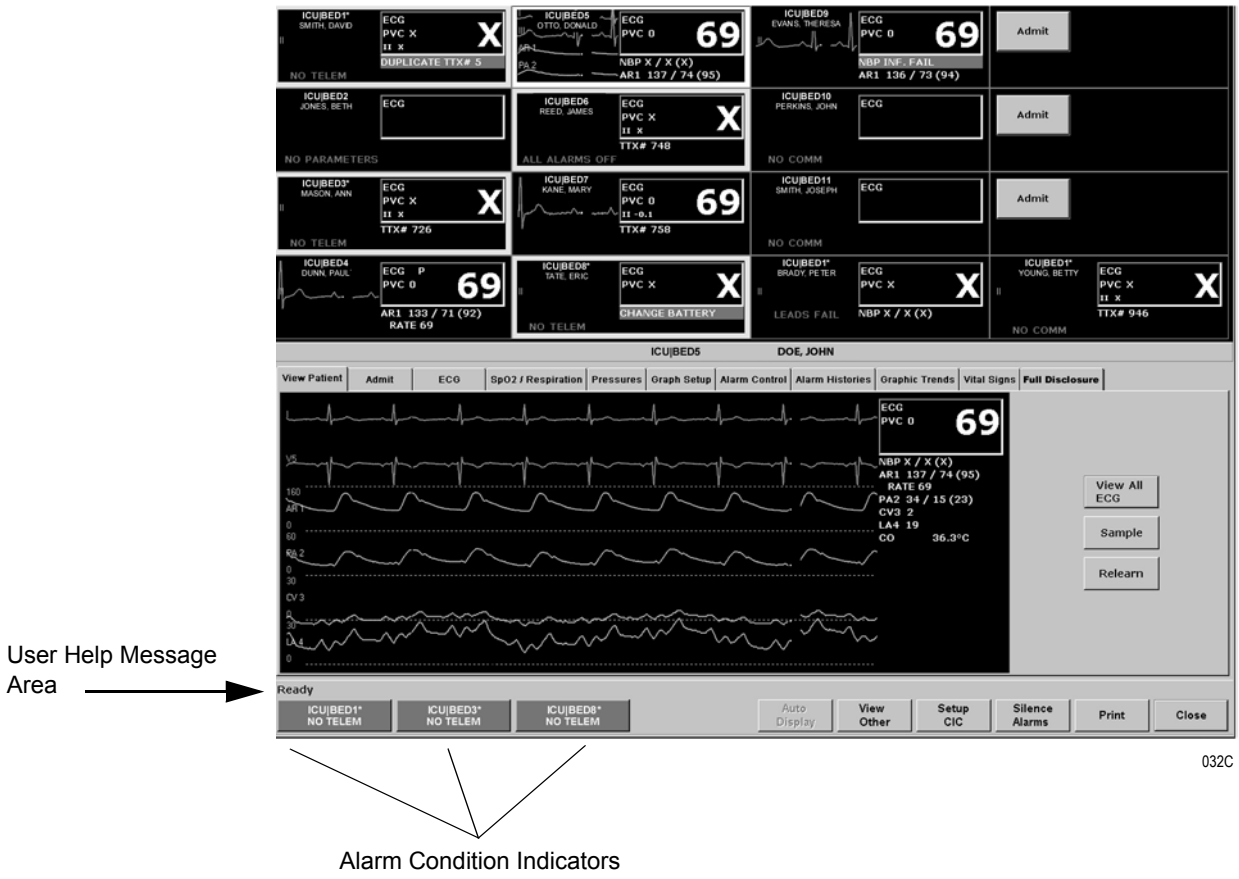
Initiating a Manual Graph

To initiate a manual graph, click the mouse pointer in the desired patient's ECG parameter window. The manual graph continues indefinitely until it is stopped by clicking the mouse pointer again in the patient's ECG parameter window.

To set manual graph locations, see "Graph Location Controls" on page 5-11.

User Help Message Area

Messages are displayed in the lower left corner of the CIC screen. Messages presented here can include descriptions of button functions, and information about what action is initiated by clicking the mouse in the cursor's current location. Refer to "Clinical Information Center Multiple Patient Viewer" on page 1-17 to see an example of this.



Alarm Condition Indicators

The four highest priority alarms within the care unit may be displayed simultaneously. The highest priority alarm always displays first (displayed on the left), with the next three highest priority alarms displayed (in left-to-right order of descending priority).

To open a single patient view of one of these beds, use the mouse to click on the alarm condition indicator. For more information, refer to Chapter 7, "Admit/View a Patient".

Main Menu Buttons

There are six Main Menu buttons at the bottom of the CIC Pro display. They are *Auto Display, View Other, Setup CIC, Silence Alarms, Print,* and *Close.*

AUTO DISPLAY—The Auto Display button toggles between configuring the CIC Pro display in the optimal configuration for the number of patients admitted (i.e., the number of patient windows is equal to the number of patients admitted), and optimal plus an empty bed window for admitting a new patient. For more information on Auto Display, refer to Chapter 4, "CIC Setup".

VIEW OTHER—The View Other button allows you to access the menus of any patient on the network, including those displayed at your CIC Pro. For more information on the View Other button, refer to Chapter 7, "Admit/View a Patient".

SETUP CIC—The Setup CIC button opens the CIC Setup window, which contains a "stack" of tab sheets for customizing the CIC Pro. For more information on CIC Pro setup, refer to Chapter 4, "CIC Setup".

SILENCE ALARMS—The Silence Alarms button silences an audible alarm tone for one minute. For more information on silencing alarms, refer to Chapter 6, "Alarm Control".

PRINT—The Print button opens the Graph All Patients window, or initiate a printout of the single patient viewer.

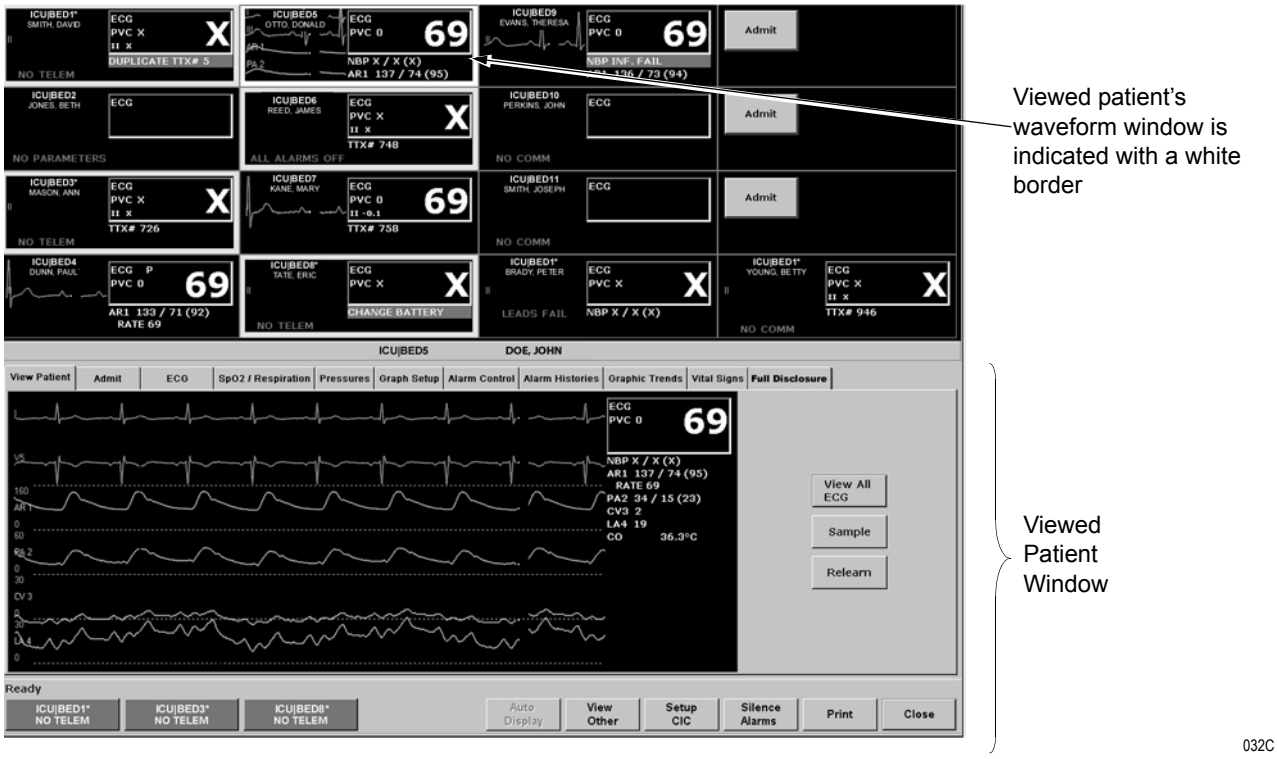
CLOSE—The Close button closes the single patient viewer.

Single Patient Viewer

To access an enlarged view of a single patient's information, click anywhere except the ECG parameter window inside that patient's window on the multiple patient viewer.

NOTE

Clicking on the patient's ECG parameter window initiates a manual graph of that patient's data. Clicking a second time stops a manual graph.



Clinical Information Center Single Patient Viewer

Data Source

The Data Source option allows the user to select the specific data source from which historical patient data (*Alarm Histories*, *Graphic Trend*s, and *Vital Signs)* can be retrieved. The Data Source option is only available when PDS is *Enabled (*refer to "Telemetry Unit Defaults" on page 4-9*)*.

The Data Source option is labeled *Data Source* and exists on the left side of the screen, between the Multi-patient viewer and the Single view window. Next to this label are two radio buttons that indicate the possible data sources:

- *Bedside* — This can be either a telemetry or a hardwire bedside. The amount of historical data is limited to the specific data source. For most hardwire bedsides, there is a limit of around 32 history events and 24 hours of trend data.
- *PDS* — This server gathers and stores trend and history events from hardwire bedsides and telemetry transmitters (refer to the compatibility list in the *Unity Network Patient Data Server (PDS) Operator's Manual*. Patient data recorded during previous (72 hours) bedside or telemetry device admissions can be viewed as a single "patient centric" session. Up to 72 hours of trend data and 500 history events can be stored for a single patient.

The radio button for PDS data source will be disabled in the *Alarm Histories*, *Graphic Trends* and *Vital Signs* tab sheets for a bedside that is not being monitored by PDS.

Once the user makes a data source selection for a specific patient, the setting remains in effect, allowing the user to interact with the data from the selected data source. Data for printing will be consistent with the currently selected data source. Selecting a different patient in the multi-viewer or re-selecting the same patient will automatically change the data source to be the bedside device.

NOTE

If the operator is on a tab sheet other than *Alarm Histories*, *Graphic Trends*, or *Vital Signs*, no selection of the data source is possible. For any application where information needs to be retrieved, such as patient name, patient ID and alarm control information, the bedside device will be used.

Time Focus

The CIC Pro has a feature called Time Focus. When you are viewing an alarm history event, time focus allows you to view the patient's vital signs, graphic trends, and full disclosure data for the same given time stamp (within one minute). The user can choose to look at a particular time and click on either the *Alarm Histories*, *Graphic Trends*, *Vital Signs*, or *Full Disclosure* tabs and view data at the same time interval the user selected on the previous tab.

NOTE

Since graphic trends are only visible for the period of time specified in the *Graphic Trends* tab sheet (refer to Chapter 9, "Graphic Trends", for more details), it is possible to view an alarm history event for which the graphic trend is no longer stored on the clinical information center. In this case, clicking on the *Graphic Trends* tab takes you to the most recent graphic trend, not the trend that corresponds to the alarm history you are viewing.

Viewing Alarm Histories

To open the *Alarm Histories* tab sheet from Graphic Trends, use the mouse to click on the *Alarm Histories* tab in the single patient viewer. The *Alarm Histories* tab sheet moves to the front, displaying the alarm history event that occurred closest to the time focus.

Viewing Graphic Trends

To open the *Graphic Trends* tab sheet from *Alarm Histories*, use the mouse to click on the *Graphic Trends* tab in the single patient viewer. The *Graphic Trends* tab sheet moves to the front, with data corresponding to the time focus at the cursor location.

Viewing Vital Signs

To open the *Vital Signs* tab sheet from *Alarm Histories*, use the mouse to click on the *Vital Signs* tab in the single patient viewer. The *Vital Signs* tab sheet moves to the front, with data corresponding to the time focus highlighted.

Viewing Full Disclosure

To open the *Full Disclosure* tab sheet from *Alarm Histories*, use the mouse to click on the *Full Disclosure* tab in the single patient viewer. The *Full Disclosure* tab sheet moves to the front, displaying the full disclosure data corresponding to the time focus highlighted.

Web Browser

CAUTION
SECURITY — The web browser which runs in conjunction with the CIC Pro is intended for hospital INTRANET use only. If confidential patient information is made available from the hospital intranet, the security of the data is the responsibility of the hospital.

The *Browse* option is at the top right corner of the title bar of the CIC Pro display screen. Select this button to launch (start) a separate Microsoft Internet Explorer™ application.

If a patient monitoring alarm occurs while the browser is open, the CIC Pro window moves to the foreground of the display, and the browser window moves to the background of the display. To restore the browser window, select the *Browse* option again or select the *Internet Explorer* button from the lower task bar.

The web browser runs independently of CIC Pro operation. However, if the CIC Pro detects 15 minutes of web browser inactivity, the web browser window closes. Subsequent web browser activity then requires you to select the *Browse* option to relaunch the program.

Browser Configuration

Refer to "Browser Configuration" on page 4-7 for information on Browser Configuration.

Menu Formats

A menu, like the name implies, is a selection of available options. These options are accessed with the mouse.

Main Menu

There are six Main Menu buttons at the bottom of the CIC Pro display. They are *Auto Display, View Other, Setup CIC, Silence Alarms, Print,* and *Close.* These buttons are top-level control buttons, and are always visible on the CIC Pro.

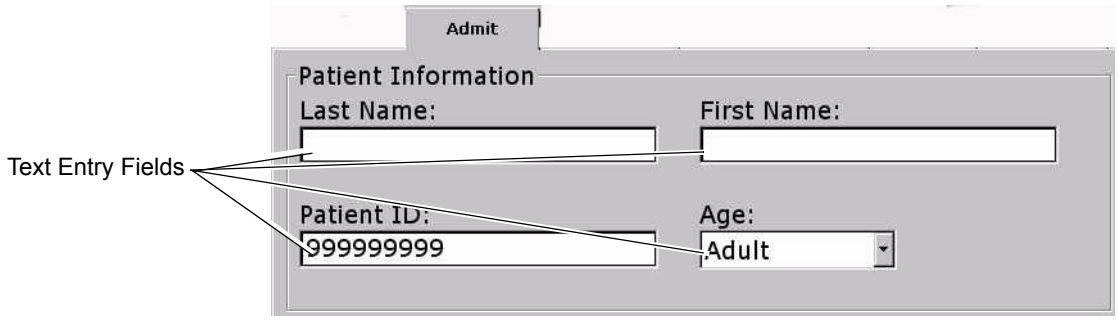
Popup Menus

When some menu options are selected, a small menu "pops up" from the selected menu option. These are called popup menus. To use a popup menu, click the mouse pointer on the desired selection. The popup menu closes. The choice either becomes effective immediately, or when the window it was accessed from closes.

Text Entry Fields

In a text entry field, you must use the keyboard to enter the required information. To enter text:

1. Position the mouse pointer so it is inside the text entry field. When the mouse pointer is inside a text entry field, it is shaped like an I-beam. Click the mouse.



037B

2. Type the appropriate information. Press the **Tab** key to move to the next field, or position the mouse pointer in the next field. Click the mouse.

NOTE

Press the **Backspace** key on the keyboard to delete characters when you change or correct entered information in the text entry field.

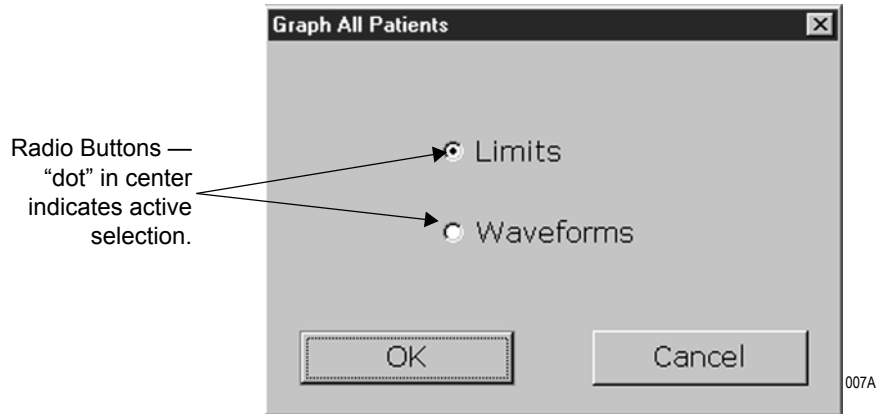
036A

Backspace Key

Controls

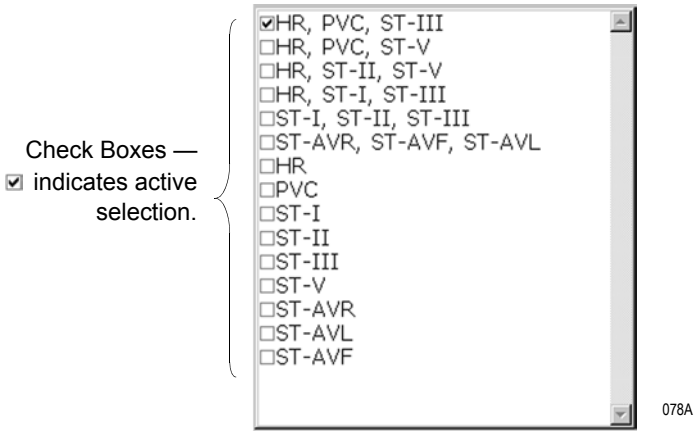
Radio Buttons

To use a radio button control, click on the label text or in the adjacent white circle. When selected, a black dot displays in this white circle. To deselect a radio button control, click on another selection. When deselected, no black dot displays.



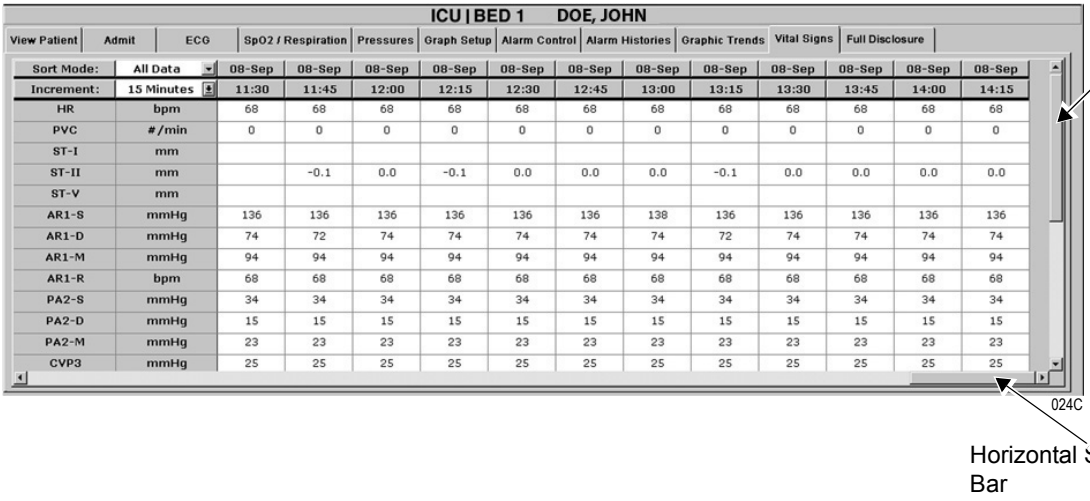
Check Boxes

To use check box controls, click on the label text or in the square. When selected, a check mark displays in this square. To deselect a check box control, click again on the label text or in the square. When deselected, no check mark displays.



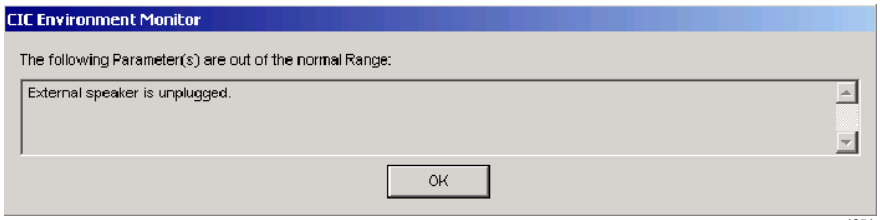
Scroll Bars

Use horizontal and vertical scroll bars to move a window's content left/right and up/down. Place the mouse pointer on the appropriate arrow to move the scroll bar, or click and hold the mouse down while dragging the scroll bar until the desired information is displayed.



System Environment Monitor Notification

The System Environment Monitor Notification feature notifies the user in the event one of the system environment parameters goes out of range. The CIC Pro responds by displaying a message window identifying the parameter(s).



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The CIC Pro supports the following notifications:

- 5v Power supply out of range
- 12v Power supply out of range
- CPU fan speed out of range
- Chassis fan out of range
- CPU temperature out of range
- Enclosure temperature out of range
- Internal speaker unplugged
- External speaker unplugged
- HDD failure

CAUTION
When a system environment monitor notification appears, contact your service personnel.

For your notes

2 Safety

For your notes

For Your Safety

Intended Use

The Clinical Information Center (CIC) Pro Central Station is intended for use under the direct supervision of a licensed healthcare practitioner. The intended use is to provide clinicians with adult, pediatric and neonatal patient data in a centralized location within a hospital or clinical environment.

The CIC Pro Central Station is intended to collect information from a network and display this data. This data includes physiological, patient demographic and / or other non-medical information.

Physiological parameters and waveforms from GE Medical Systems *Information Technologies* monitors and telemetry systems can be displayed and printed from the CIC Pro Central Station. Beat to beat patient information for all parameters and waveforms from the bedside and telemetry systems can be displayed.

The CIC Pro Central Station supports the ability to access information from GE Medical Systems *Information Technologies*' products in a web browser format. Additionally, CIC Pro Central Station supports the ability to access patient information collected from the Unity network and stored on a network server.

Terminology

The terms danger, warning, and caution are used throughout this manual to point out hazards and to designate a degree or level of seriousness. Familiarize yourself with their definitions and significance.

Hazard is defined as a source of potential injury to a person.

DANGER indicates an imminent hazard which, if not avoided, will result in death or serious injury.

WARNING indicates a potential hazard or unsafe practice which, if not avoided, could result in death or serious injury.

CAUTION indicates a potential hazard or unsafe practice which, if not avoided, could result in minor personal injury or product/property damage.

NOTE provides application tips or other useful information to assure that you get the most from your equipment.

Monitor Safety

The safety statements presented in this chapter refer to the equipment in general. Look for additional device safety information throughout the rest of this manual.

The order in which safety statements are presented in no way implies order of importance.

Dangers

There are no dangers that refer to the equipment in general. Specific "Danger" statements may be given in the respective sections of this manual.

Warnings

WARNINGS

ACCIDENTAL SPILLS — To avoid electric shock or device malfunction liquids must not be allowed to enter the device. If liquids have entered a device, take it out of service and have it checked by a service technician before it is used again.

ACCURACY — If the accuracy of any value displayed on the screen or printed on a graph strip is questionable, first determine the patient's vital signs by alternative means and then verify that the clinical information center and printer are working correctly.

ALARMS — Do NOT rely exclusively on the audible alarm system for patient monitoring. Adjustment of alarm volume to a low level or off during patient monitoring may result in a hazard to the patient. Remember that the most reliable method of patient monitoring combines close personal surveillance with correct operation of monitoring equipment.

After connecting the monitor to the central station and/or nurse-alert system, verify the function of the alarm system. Repeat this verification periodically, including a check of all connected speakers.

CIC Pro audible alarms will not sound for patients with bedside monitoring devices configured to "Operating Room" mode.

WARNING

BEFORE INSTALLATION — Compatibility is critical to safe and effective use of this device. Please contact your local sales or service representative prior to installation to verify equipment compatibility.

BEFORE USE — Before putting the system into operation visually inspect all connecting cables for signs of damage. Damaged cables and connectors must be replaced immediately.

Before using the system, the operator must verify that it is in correct working order and operating condition.

Periodically, and whenever the integrity of the product is in doubt, test all functions.

DISCHARGE TO CLEAR PATIENT DATA — When admitting a new patient, you must clear all previous patient data from the system. To accomplish this, disconnect patient cables then do a discharge.

DISCONNECTION FROM MAINS — When disconnecting the system from the power line, remove the plug from the wall outlet first. Then you may disconnect the power cord from the device. If you do not observe this sequence, there is a risk of coming into contact with line voltage by inserting metal objects, such as the pins of leadwires, into the sockets of the power cord by mistake.

DISPOSAL — Dispose of the packaging material, observing the applicable waste control regulations and keeping it out of children's reach.

EXPLOSION HAZARD — Do NOT use this equipment in the presence of flammable anesthetics, vapors or liquids.

WARNINGS

INTERFACING OTHER EQUIPMENT — Devices may only be interconnected with each other or to parts of the system when it has been determined by qualified biomedical engineering personnel that there is no danger to the patient, the operator, or the environment as a result. In those instances where there is any element of doubt concerning the safety of connected devices, the user must contact the manufacturers concerned (or other informed experts) for proper use. In all cases, safe and proper operation should be verified with the applicable manufacturer's instructions for use, and system standards IEC 601-1-1/EN 60601-1-1 must be complied with.

LEAKAGE CURRENT TEST — When interfacing with other equipment, a test for leakage current must be performed by qualified biomedical engineering personnel before using with patients.

LOSS OF MONITORING — If the monitoring at the CIC Pro is temporarily interrupted, alternate monitoring devices or close observation should be used until the monitoring function at the CIC Pro is restored.

Indications of a loss of the monitoring function at the CIC Pro are as follows.

- RED SCREEN indicates the CIC Pro application is restarting itself and patient monitoring at the CIC Pro is NOT occurring. The monitoring function at the CIC Pro will automatically resume. No user action is required.
- BLUE SCREEN indicates the Windows operating system has a functional error and patient monitoring at the CIC Pro is NOT occurring. If the CIC Pro does not automatically restart after 60 seconds, the monitoring function at the CIC Pro will not resume until you turn off the power to the CIC Pro and then turn the power back on. The monitoring function should resume in approximately 2 to 3 minutes.

Once the monitoring function at the CIC Pro has been restored, you should verify the correct monitoring state and alarm function.

WARNINGS

LOSS OF MONITORING — If the browser function is inappropriately used, loss of monitoring function may result. Use alternate monitoring devices or close patient observation until the monitoring function at the CIC Pro is restored.

When using the browser function, follow these restrictions:

- Do not attempt to access the file systems of the CIC Pro through the use of the browser.
- Do not attempt to download files of any type. This includes, but is not limited to, audio or video files.
- Do not play user defined audio (i.e. Media Player, streaming radio stations).

NETWORK INTEGRITY — The clinical information center resides on the hospital's computer network, and it is possible that inadvertent or malicious network activity could adversely affect patient monitoring. The integrity of the computer network is the responsibility of the hospital.

POWER SUPPLY — The device must be connected to a properly installed power outlet with protective earth contacts only.

GE Medical Systems *Information Technologies* recommends the use of a UPS with the CIC Pro. If a UPS is NOT used, improper shut downs of the system could result in the event of a power outage and cause a lengthy disk scan procedure when the unit reboots. You could also lose data in the event of a power outage if you do not use a UPS.

All devices of a system must be connected to the same power supply circuit. Devices which are not connected to the same circuit must be electrically isolated when operated (electrically isolated RS232 interface).

WARNINGS

RATE METERS — Keep pacemaker patients under close observation. Rate meters may continue to count the pacemaker rate during cardiac arrest and some arrhythmias. Therefore, do NOT rely entirely on rate meter alarms.

SITE REQUIREMENTS — Do NOT route cables in a way that they may present a stumbling hazard. For devices installed above the user, adequate precautions must be taken to prevent them from dropping.

Cautions

CAUTIONS

DISPOSAL — At the end of its service life, the product described in this manual, as well as its accessories, must be disposed of in compliance with the guidelines regulating the disposal of such products. If you have questions concerning disposal of the product, please contact GE Medical Systems *Information Technologies* or its representatives.

EMC — Magnetic and electrical fields are capable of interfering with the proper performance of the device. For this reason make sure that all external devices operated in the vicinity of the monitor comply with the relevant EMC requirements. X-ray equipment or MRI devices are a possible source of interference as they may emit higher levels of electromagnetic radiation.

INSTRUCTIONS FOR USE — For continued safe use of this equipment, it is necessary that the listed instructions are followed. However, instructions listed in this manual in no way supersede established medical practices concerning patient care.

CAUTIONS

LOSS OF DATA — Should the monitor at any time temporarily lose patient data, the potential exists that active monitoring is not being done. Close patient observation or alternate monitoring devices should be used until monitor function is restored.

If the monitor does not automatically resume operation within 60 seconds, power cycle the monitor using the power on/off switch. Once monitoring is restored, you should verify correct monitoring state and alarm function.

MAINTENANCE — Regular preventive maintenance should be carried out annually. You are responsible for any requirements specific to your country.

MPSO — The use of a multiple portable socket outlet (MPSO) for a system will result in an enclosure leakage current equal to the sum of all individual earth leakage currents of the system if there is an interruption of the MPSO protective earth conductor. Do NOT use an additional extension cable with the MPSO as it will increase the chance of the single protective earth conductor interruption.

NEGLIGENCE — GE Medical Systems *Information Technologies* does not assume responsibility for damage to the equipment caused by improperly loaded software, failure or data loss due to not using a UPS, and/or improperly vented cabinets, or improper or faulty power.

OPERATOR — Medical technical equipment such as this monitor/monitoring system must only be used by persons who have received adequate training in the use of such equipment and who are capable of applying it properly.

CAUTIONS

POWER REQUIREMENTS — Before connecting the device to the power line, check that the voltage and frequency ratings of the power line are the same as those indicated on the unit's label. If this is not the case, do not connect the system to the power line until you adjust the unit to match the power source.

In U.S.A., if the installation of this equipment will use 240V rather than 120V, the source must be a center-tapped, 240V, single-phase circuit.

RESTRICTED SALE — U.S. federal law restricts this device to sale by or on the order of a physician.

SECURITY — The web browser which runs in conjunction with the clinical information center is intended for hospital INTRANET use only. If confidential patient information is made available from the hospital intranet, the security of the data is the responsibility of the hospital.

SUPERVISED USE — This equipment is intended for use under the direct supervision of a licensed health care practitioner.

UNINTENTIONAL RADIO FREQUENCY (RF) INTERFERENCE — Unintentional RF interference could degrade the reliability and performance of the wireless data link. The facility must maintain an RF environment free from unintentional interference. Refer to the service manual for more information.

VENTILATION REQUIREMENTS — Set up the device in a location which affords sufficient ventilation. The ventilation openings of the device must not be obstructed. The ambient conditions specified in the technical specifications must be ensured at all times.

Notes

- Choose a location which affords an unobstructed view of the clinical information center's screen and easy access to the operating controls.
- This product is not likely to cause abnormal operation of other patient-connected equipment such as a cardiac pacemaker or other electrical stimulators.
- This equipment is suitable for connection to public mains as defined in CISPR 11.
- This equipment is suitable for use in the presence of electrosurgery.

Reference Literature

Medical Device Directive 93/42/EEC

EN 60601-1/1990 + A1: 1993 + A2: 1995: Medical electrical equipment. General requirements for safety

EN 60601-1-1/9.1994 + A1 12.95: General requirements for safety. Requirements for the safety of medical electrical systems.

IEC Publication 513/1994: Fundamental aspects of safety standards for medical equipment.

Equipment Symbols

NOTE
Some symbols may not appear on all equipment.

ATTENTION: Consult accompanying documents.

CAUTION: To reduce the risk of electric shock, do NOT remove cover. Refer servicing to qualified service personnel.

TYPE B APPLIED PART: Non-isolated applied part suitable for intentional external and internal application to the patient, excluding direct cardiac application.
[Medical Standard Definition:] Applied part complying with the specified requirements of IEC 601-1/UL 2601-1/CSA 601.1 Medical Standards to provide protection against electric shock, particularly regarding allowable leakage current.

TYPE BF APPLIED PART: Isolated (floating) applied part suitable for intentional external and internal application to the patient excluding direct cardiac application. “Paddles” outside the box indicate the applied part is defibrillator proof.
[Medical Standard Definition:] F-type applied part (floating/isolated) complying with the specified requirements of IEC 601-1/UL 2601-1/CSA 601.1 Medical Standards to provide a higher degree of protection against electric shock than that provided by type B applied parts.

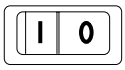
NOTE
The rating of protection against electric shock (indicated by symbol for CF or BF) is achieved only when used with patient applied parts recommended by GE Medical Systems *Information Technologies*.

TYPE CF APPLIED PART: Isolated (floating) applied part suitable for intentional external and internal application to the patient including direct cardiac application. “Paddles” outside the box indicate the applied part is defibrillator proof.
[Medical Standard Definition:] F-type applied part (floating/isolated) complying with the specified requirements of IEC 601-1/UL 2601-1/CSA 601.1 Medical Standards to provide a higher degree of protection against electric shock than that provided by type BF applied parts.

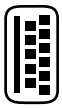
Fuse

Equipotential Stud: A ground wire from another device can be tied here to ensure the devices share a common reference.

Alternating current (AC)

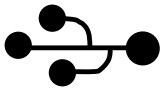


Power; I = ON; O = OFF

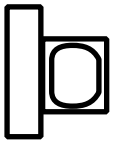


KEYBOARD ICON: Denotes the keyboard port.

MOUSE ICON: Denotes the mouse port.



USB PORT ICON: Denotes the USB port. Not used for CIC Pro.

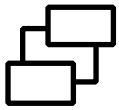


VGA MONITOR ICON: Denotes the VGA monitor port.

PARALLEL (PRINTER) PORT ICON: Denotes the parallel port into which the optional laser printer is connected.

SERIAL COMMUNICATION (COM) PORT ICON: Denotes the communication (COM) ports, used for:

- Optional Service Modem (COM 1) and
- Optional PRN-50/PRN-50M Writer (COM 2).



ETHERNET ICON: Denotes the ethernet ports, used for the Unity MC network connection.

SPEAKER OUT ICON: Denotes the speaker port connection.

PRESS

Indicates where to press to open the door on printer.

Silence Alarms keyboard key.

Classification

The device is classified, according to IEC/UL/EN 60601-1, as:

Type of protection against electrical shock	Class I
Degree of protection against electrical shock	Not applicable (No Applied Parts)
Degree of protection against harmful ingress of water	**IPX0** (enclosed equipment without protection against ingress of water)
Degree of safety of application in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide	**Equipment not suitable** for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide
Method(s) of sterilization or disinfection recommended by the manufacturer	Not applicable
Mode of operation	Continuous operation

Underwriters Laboratories, Inc.

Medical Equipment
With respect to electric shock, fire and mechanical hazards only in accordance with UL 60601-1, and CAN/CSA C22.2 NO. 601.1. and IEC, EN 60601-1.

3 Maintenance

For your notes

Biocompatibility

When used as intended, the parts of the product described in this operator manual, including accessories that come in contact with the patient during the intended use, fulfill the biocompatibility requirements of the applicable standards. If you have questions about this matter, please contact GE Medical Systems *Information Technologies* or its representatives.

Inspection

All equipment needs to be maintained on a regular basis to ensure reliability. This chapter describes inspection and cleaning procedures. Refer to the service manual for technical maintenance information.

An effective maintenance schedule should be established for your monitoring equipment and reusable supplies. This should include inspection as well as general cleaning on a regular basis.

CAUTION
Failure on the part of the responsible hospital or institution employing the use of this monitoring equipment to implement a satisfactory maintenance schedule may cause undue equipment failure and possible health hazards.

Check with your Biomedical Department to be sure preventive maintenance and calibration has been done. The applicable service manuals contain detailed information.

Follow these guidelines when inspecting the equipment:

- Inspect the equipment for obvious physical damage and replace damaged items.
- Inspect all cords for fraying or other damage. Inspect all plugs and connectors for bent prongs or pins. Repair or replacement must be performed by qualified service personnel.
- Inspect all cable insulation. Qualified service personnel should repair or replace damaged or deteriorated cables.

GE Medical Systems *Information Technologies* is available 24 hours a day by calling **800-558-7044.**

Cleaning

General Cleaning

Your equipment should be cleaned on a regular basis. Follow these guidelines when preparing to clean, disinfect, or sterilize the equipment:

- Consult your hospital's policies and procedures for cleaning, disinfecting, or sterilizing equipment.
- Refer to Material Safety Data Specifications (MSDS) or hospital guidelines when choosing a cleaning, disinfecting, or sterilizing agent.

The exterior surfaces of the equipment may be cleaned with a lint-free cloth, dampened with a diluted cleaning solution. Drying off excess cleaning solution is recommended. Following are examples of tested cold cleaning/disinfectant/sterilizing solutions:

- ammonia (diluted),
- CompuBlend B (ammonium chloride),
- Virex (ammonium chloride),
- Cidex (glutaraldehyde),
- sodium hypochlorite bleach (diluted), or
- mild soap (diluted).

To avoid damage to the equipment, follow these rules:

CAUTION
Failure to follow these rules may melt, distort, or dull the finish of the case, blur lettering on the labels, or cause equipment failures.

- ALWAYS dilute the solutions according to the manufacturer's suggestions.

  NOTE
  Damage to equipment caused from submersion or from use of unrecommended cleaning agents is not covered by warranty. Always refer to your hospital/MSDS guidelines when choosing a cleaning/disinfectant/sterilizing agent.

- ALWAYS wipe off all the cleaning solution with a dry cloth after cleaning.
- NEVER use wax containing a cleaning substance.
- NEVER SUBMERSE, POUR OR SPRAY water or any cleaning solution on the equipment or permit fluids to run behind switches, into the connectors, or into any ventilation openings in the equipment.
  - Never use these cleaning agents:
  - abrasive cleaners or solvents of any kind,
  - acetone,
  - alcohol based cleaning agents,
  - Betadine

Cleaning the Touchscreen

NOTE: Turn the display power off before cleaning the touchscreen.

Clean the touchscreen with one of the following approved solutions:

- Household glass cleaner,
- Virex (full strength), or
- Cavicide (diluted: 1/2 oz per gallon of water).

To avoid damage to the equipment, follow these rules:

CAUTION
Failure to follow these rules may melt, distort, or dull the finish of the case, blur lettering on the labels, or cause equipment failures.

- Always dampen the towel and then clean the touchscreen.
- Do NOT spray cleaner directly on the touchscreen.
- Do NOT use these chemicals on the touchscreen:
  - Acetone
  - Methylene chloride
  - Methyl ethyl ketone
  - Hexane
  - Ammonia-based glass cleaners

Technical Maintenance

Schematic diagrams, specifications, and other relevant technical information can be found in the service manuals supplied with this equipment. Comply with the policies of your institution's Biomedical Department, or the recommendations made within the Preventive Maintenance section of the product's service manual.

For your notes

4 CIC Setup

For your notes

Introduction

The *Setup CIC* button in the Main Menu opens the CIC Setup window, which contains a "stack" of tab sheets for customizing the clinical information center.

The tab sheets include*:*

- *CIC Defaults,*
- *Telemetry Unit Defaults,*
- *Telemetry Alarm Control Defaults,*
- *Current Telemetry Listings,*
- *Display Format,*
- *Screen Calibration,*
- *Service Password,* and
- *Full Disclosure Defaults.*

While the user can view all of the tab sheets within the CIC Setup window, many of the functions on these tab sheets may only be configured using the service mode.

The functions available on these tab sheets that can only be configured in service mode are discussed in detail in the service manual.

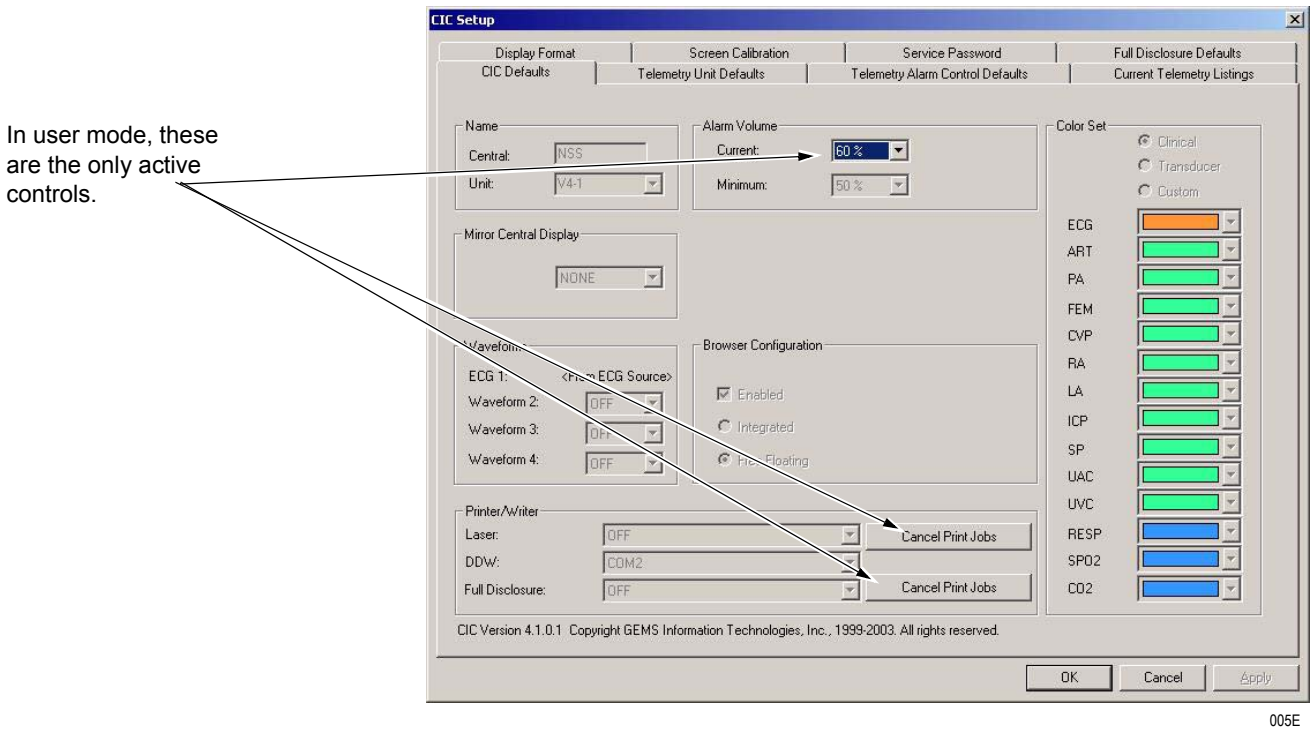
CIC Defaults

NOTE

In user mode, most of the controls on the *CIC Defaults* tab sheet are view-only and appear grayed-out in color. The only controls on this tab sheet that are active from user mode are the *Alarm Volume* drop-down menu and the *Cancel Print Jobs* buttons.

When in service mode, the *CIC Defaults* window allows you to modify several elements of the clinical information center display. To open the *CIC Defaults* tab sheet, follow these steps.

1. Use the mouse to click on *Setup CIC* in the Main Menu.
2. Click on the *CIC Defaults* tab to bring it to the front.



CIC Defaults Tab Sheet

NOTE

To access the service mode, use the mouse pointer to click on the *Service Password* tab sheet. Then type in the service password. Select *OK* to activate the password. The service password is available only to the appropriate personnel.

CIC Defaults Controls

Name

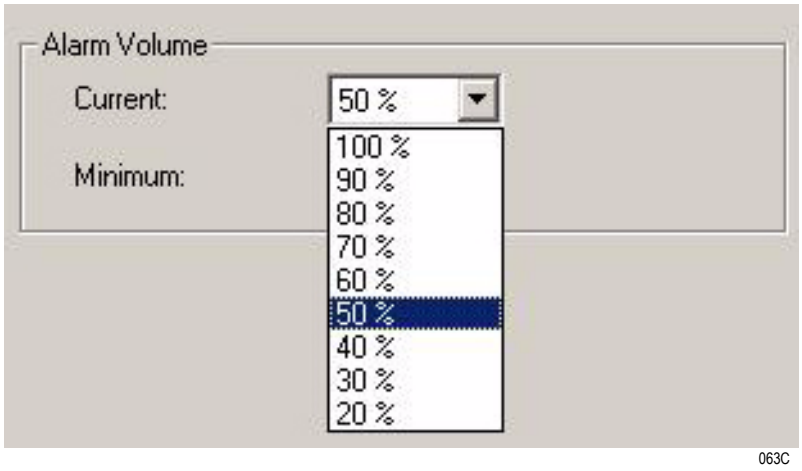
CENTRAL NAME —This option allows you to enter the name for this clinical information center.

UNIT NAME—This option allows you to enter the care unit name for use on the GE Medical Systems *Information Technologies* Unity IS network.

Alarm Volume

The current alarm volume can be set to any level above the minimum alarm volume that was designated in the service mode. To adjust the current alarm volume:

1. Click on the *Current* drop down menu in the *Alarm Volume* control area. The *Current* drop down menu opens.
2. Click on the desired alarm volume level. The choice becomes effective immediately.



Alarm Volume Popup Menu

NOTE

You must enter the service mode to change the minimum alarm volume.

Mirror Central Display

You can set up a mirrored CIC Pro for remote monitoring. This is set in the service mode. When a mirrored CIC Pro is set up, these rules are in place:

- The main and mirrored CIC Pro display the same patients and the same number of patient slots. However, if the user selects new parameters to view on one display, those parameters are NOT mirrored on the other display.
- *Auto Display* should be set to disabled at the mirrored CIC Pro when a mirrored CIC Pro is set up. However, *Auto Display* is still active on the main CIC Pro. See "Changing the Display Format" on page 4-18.
- When using the mirror feature on the CIC Pro product, both the main and mirrored CIC Pro must be set to the same display format for the mirror feature to work correctly. Set the *Number of Patients* in the *Display Format* tab of the mirrored CIC Pro to match the main CIC Pro. See "Changing the Display Format" on page 4-18.
- The title bar of the mirror CIC Pro displays *mirror of [CIC SELECTED]*.

Waveforms

ECG 1 — This waveform is defined by the ECG source.

WAVEFORMS 2 – 4—These selections allows you to define multiple patient viewer waveforms.

Browser Configuration

This control allows you to disable/enable and configure the web browser (refer to "Web Browser" on page 1-28). When enabled, the *Browser Configuration* includes the following possibilities.

- Single Monitor—Browser *Integrated* into Single Patient Viewer,
- Single Monitor—Browser *Free Floating*
- Dual Monitor—Browser into second monitor.

To exit the web browser, select the *Close* button on the CIC Pro.

Dual Monitor

The CIC Pro allows for the use of a secondary monitor when using the web browser. The browser displays full screen on the secondary monitor. Please refer to your CIC Pro service manual for configuration.

Printer/Writer

LASER PRINTER —This control allows you to designate the default laser printer for this clinical information center.

DDW —This control allows you to designate the default DDW for this clinical information center.

FULL DISCLOSURE—This control allows you to designate the default printer to print Full Disclosure for this clinical information center.

Cancel Print Jobs

This control allows you to cancel a print job to the Laser printer or Full Disclosure printer. Click on the *Cancel Print Jobs* to cancel any printing jobs. This only cancels print jobs that originate from the same CIC Pro. You cannot cancel print jobs at another CIC Pro.

Color Set

This control allows you to set a color scheme for waveforms. Preset choices are *Clinical, Transducer,* or *Custom*.

- *Clinical*

  This sets the colors for single-parameter or double-parameter patient monitoring. *ECG* waveforms display in orange; *ART, PA, FEM, CVP, RA, LA, ICP, SP, UAC*, and *UVC* display in green; and *RESP, SPO2*, and *CO2* display in blue.

- *Transducer*

  This sets the colors for multi-parameter patient monitoring. Display colors are: *ECG* in brown, *ART* in red, *PA* in yellow, *FEM* in red, *CVP* and *RA* in blue, *LA* and *ICP* in white, *SP* in green, *UAC* in red, *UVC* in blue, *RESP* and *SPO2* in green, and *CO2* in white.

- *Custom*

  This selection allows you to set each waveform color individually.

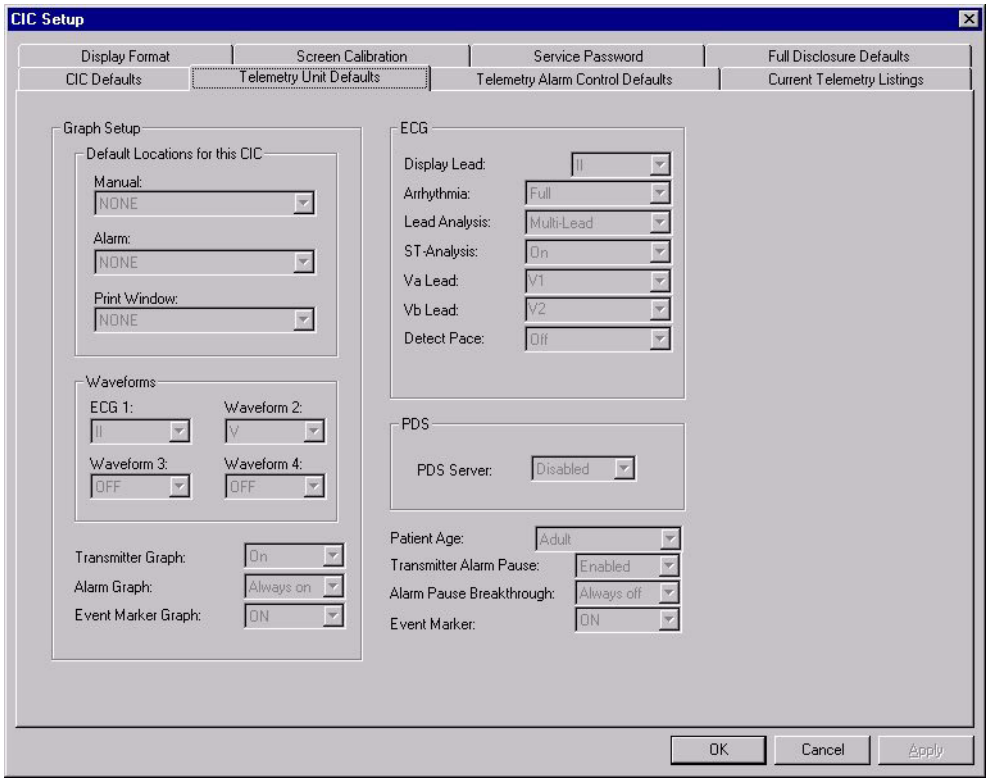
Telemetry Unit Defaults

NOTE

In user mode, all of the controls on the *Telemetry Unit Defaults* tab sheet are view-only. You must enter the service mode to make modifications to the *Telemetry Unit Defaults* tab sheet.

In service mode, Telemetry Unit Defaults can be reviewed and modified at the clinical information center. To open the *Telemetry Unit Defaults* tab sheet:

1. Click on *Setup CIC* in the Main Menu.
2. Click on the *Telemetry Unit Defaults* tab.



Telemetry Unit Defaults Tab Sheet

Telemetry Unit Defaults Controls

NOTE

For more information on setting Telemetry Unit Defaults, refer to the telemetry system's operator manual.

Graph Setup

MANUAL GRAPH LOCATION —This option allows you to designate the default manual graph location for telemetry patients.

ALARM GRAPH LOCATION —This option allows you to designate the default alarm graph location for telemetry patients.

PRINT WINDOW LOCATION —This option allows you to designate the default print window location for telemetry patients.

Graph Waveforms

ECG 1:—This option allows you to designate the primary ECG lead for printing.

WAVEFORM 2 – 4—This option allow you to enable/disable graphing for subsequent ECG leads. Choices are Off, I*, II, III, V, aVR, aVL*, and *aVF*.

Transmitter Graph

This option allows you to turn on/off transmitter graph printing.

Alarm Graph

This option allows you to turn on/off alarm graph printing.

Event Marker Graph

This option allows you to turn on/off event marker graph printing.

ECG

DISPLAY LEAD—This option allows you to set the primary ECG lead for display in the patient's waveform window. Choices are *I, II, III, V, aVR, aVL,* and *aVF*.

ARRHYTHMIA—This option allows you to enable/disable an arrhythmia analysis program. Choices are *Full, Lethal,* and *Off*.

LEAD ANALYSIS—This option allows you to designate Single-Lead or Multi-Lead analysis for ECG and arrhythmia analysis.

ST ANALYSIS—This option allows you to enable/disable ST analysis. Choices are *On* or *Off*.

VA LEAD/VB LEAD—This option allows you to set the default for the V leads that will be monitored in these positions. A 6-lead cable is required for multiple V-lead monitoring. Choices for Va are *V1, V2, V3, V4, V5*, and *V6*. Choices for Vb are *V2, V3, V4, V5*, and *V6*.

DETECT PACE—This option allows you to enable/disable pacer detection. Choices are *Pace 1, Pace 2,* and *Off*.

PDS

This option allows you to enable/disable use of the Patient Data Server.

Patient Age

This option allows you to set patient age. Choices are *0–2 years, 3–11 years, 11–13 years*, and *Adult*.

Transmitter Alarm Pause

This option allows you to turn on/off transmitter alarm pausing. Choices are *Enabled, Disabled*, and *Off*.

Alarm Pause Breakthrough

This option allows you to turn on/off transmitter pause breakthrough. Choices are *Always on* and *Always off*.

Event Marker

This option allows you to turn on/off transmitter event marker.

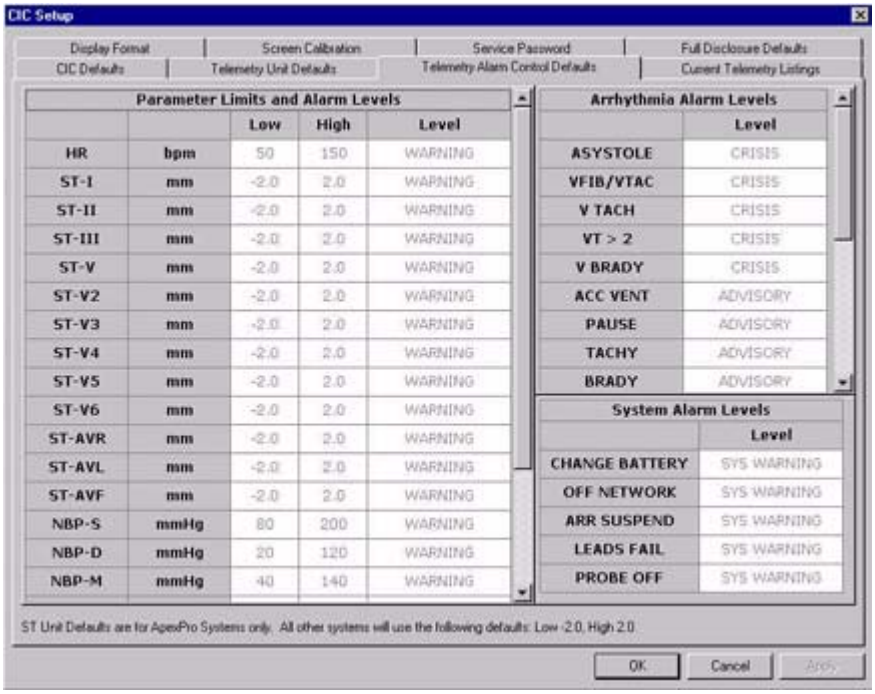
Telemetry Alarm Control Defaults

NOTE

In user mode, all of the controls on the *Telemetry Alarm Control Defaults* tab sheet are view-only. You must enter the service mode to make modifications to the *Telemetry Alarm Control* tab sheet.

In service mode, the *Telemetry Alarm Control Defaults* tab sheet allows you to set default limits and alarm settings for telemetry patients. To open the *Telemetry Alarm Control Defaults* tab sheet:

1. Use the mouse to click on *Setup CIC* in the Main Menu.
2. Click on the *Telemetry Alarm Control Defaults* tab.



010D

Telemetry Alarm Control Defaults Tab Sheet

Telemetry Alarm Control Defaults Controls

NOTE

For more information on setting Telemetry Alarm Control Defaults, refer to the telemetry system's operator manual.

Parameter Limits And Alarm Levels

This option allows you to set default parameter alarms limits and alarm levels for the following parameters: HR, NBP-S, NBP-D, NBP-M, SPO2, SPO2-R, ST-I, ST-II, ST-III, ST-V, ST-V2, ST-V3, ST-V4, ST-V5, ST-V6, ST-aVR, ST-aVL, ST-aVF, and PVC.

Arrhythmia Alarm Levels

This option allows you to set default alarm levels for the following arrhythmia calls: ASYSTOLE, VFIB/VTAC, V TACH, VT>2, V BRADY, ACC VENT, PAUSE, TACHY, BRADY, R ON T, COUPLET, BIGEMINY, TRIGEMINY, PVC, IRREGULAR and ATRIAL FIB.

The default alarm levels for ASYSTOLE and VFIB/VTACH cannot be moved from the Crisis level.

System Alarm Levels

This option allows you to set default alarm levels for the following system alarms: CHANGE BATTERY, OFF NETWORK, ARR SUSPEND, LEADS FAIL, PROBE OFF.

WARNING

ADJUSTING SYSTEM ALARM LEVELS — The LEADS FAIL alarm indicates that one or more electrodes are not connected to the patient and, as a result, there is loss of all waveforms and arrhythmia analysis. The ARR SUSPEND alarm indicates that arrhythmia conditions are not being detected and therefore alarms associated with arrhythmias will not occur. The LEADS FAIL and ARR SUSPEND alarms should be adjusted to a lower priority level only by experienced qualified personnel and with great caution. Adjusting these alarms to a lower priority level may result in reduced awareness of conditions that indicate the loss of patient monitoring.

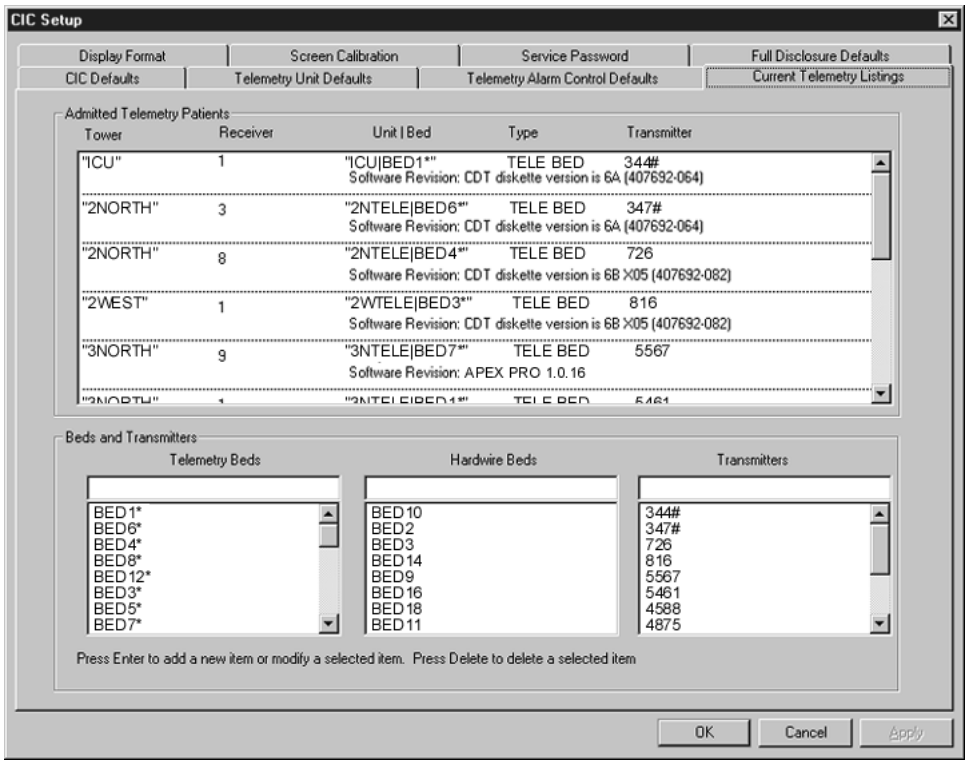
Current Telemetry Listings

NOTE

In user mode, the *Current Telemetry Listings* tab sheet is view-only. You must enter the service mode to make modifications to the *Current Telemetry Listings* tab sheet.

In service mode, the *Current Telemetry Listings* tab sheet allows you to view and modify characteristics of telemetry settings. To open the *Current Telemetry Listings* tab sheet:

1. Click on *Setup CIC* in the Main Menu.
2. Click on the *Current Telemetry Listings* tab.



012C

Current Telemetry Listings Tab Sheet

Current Telemetry Listings Controls

The *Admitted Telemetry Patients* control is for information only. The *Bed and Transmitters* controls can only be modified from within service mode.

Admitted Telemetry Patients

NOTE

This overview covers the controls in a row. Each row contains information for one telemetry patient.

The second line of an entry shows the current software level for the patient bed in question.

TOWER—indicates which telemetry receiver cabinet (tower) this telemetry patient is communicating with.

RECEIVER—indicates which receiver assembly inside the telemetry receiver cabinet this telemetry patient is communicating with.

UNIT | BED—indicates the unit and bed to which this patient has been assigned.

TYPE—indicates the type of patient this is: Tele Bed or Tele Combo.

TRANSMITTER—indicates the identification number assigned to this patient's transmitter.

Bed and Transmitters

TELEMETRY BEDS—allows you to add, modify, or delete a telemetry bed name.

HARDWIRE BEDS—allows you to add, modify, or delete a hardwire bed name.

TRANSMITTERS—allows you to add, modify, or delete a telemetry transmitter.

Alpha-Numeric TTX ID Numbering

During setup, the CIC Pro does NOT allow the user to enter alpha-numeric transmitter numbers. However, by entering the transmitter ID number (found in parenthesis on the back of the ApexPro transmitter), the CIC Pro automatically converts the ID to an alphanumeric numbering scheme and displays this number under the patient's bed window.

NOTE

The TTX ID number is composed of either a three, four, or five-digit number.

Display Format

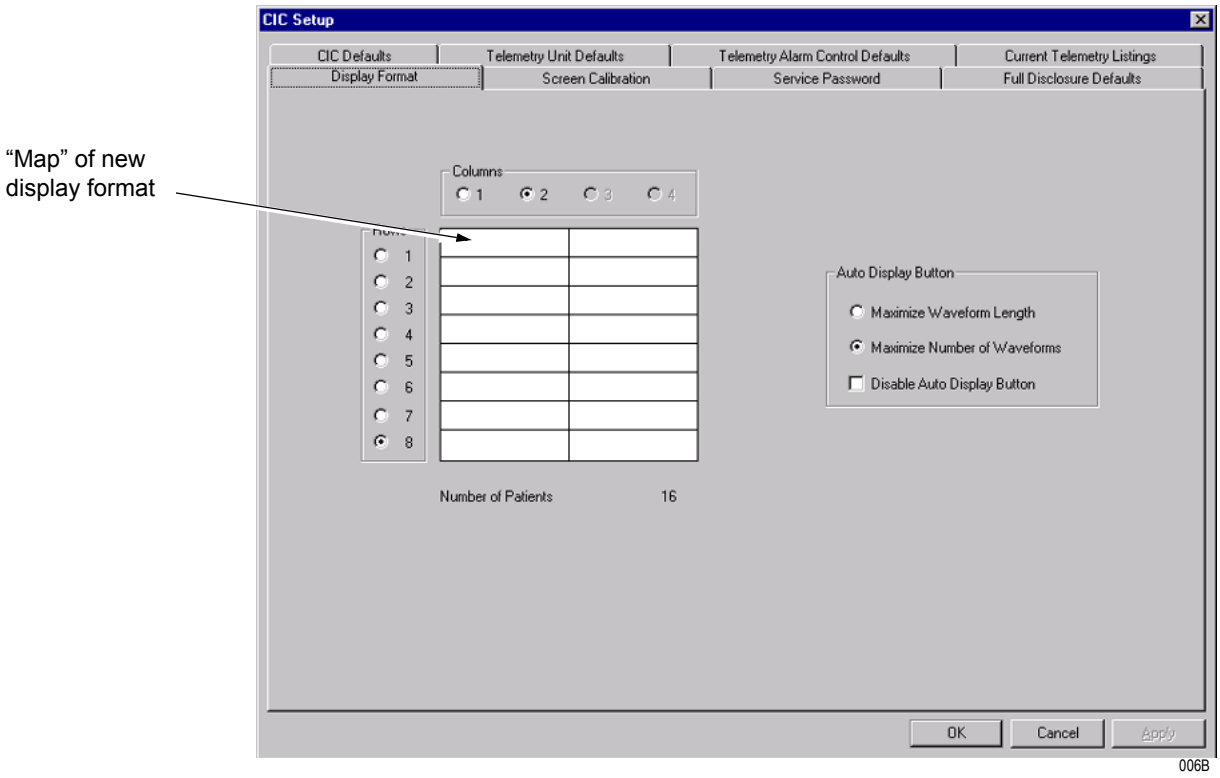
The *Display Format* tab sheet allows you to format the clinical information center's multiple patient viewer with the required number of patient windows.

NOTE

Modifications to display format are subject to licensing restrictions.

To open the *Display Format* tab sheet:

1. Click on *Setup CIC* in the Main Menu.
2. Click on the *Display Format* tab.



Display Format Tab Sheet

Display Format Controls

Columns

This control allows you to designate the number of columns of patient windows in the multiple patient viewer.

Rows

This control allows you to designate the number of rows of patient windows in the multiple patient viewer.

Map Of New Display

This control reflects the current Columns/Rows selections graphically. When the Columns or Rows selections change, this map is immediately updated.

AUTO DISPLAY BUTTON—allows you to set the function of the Auto Display button in the Main Menu, or to disable it. Choices are Maximize Waveform Length, Maximize Number of Waveforms, and Disable Auto Display Button.

Changing the Display Format

You must remove admitted beds from the display before you can select a display format that would eliminate those patient slots from the display.

To do this, right-click the mouse pointer in the appropriate slot, and choose *None* from the *Select Care Unit then Bed Number* menu.

NOTE

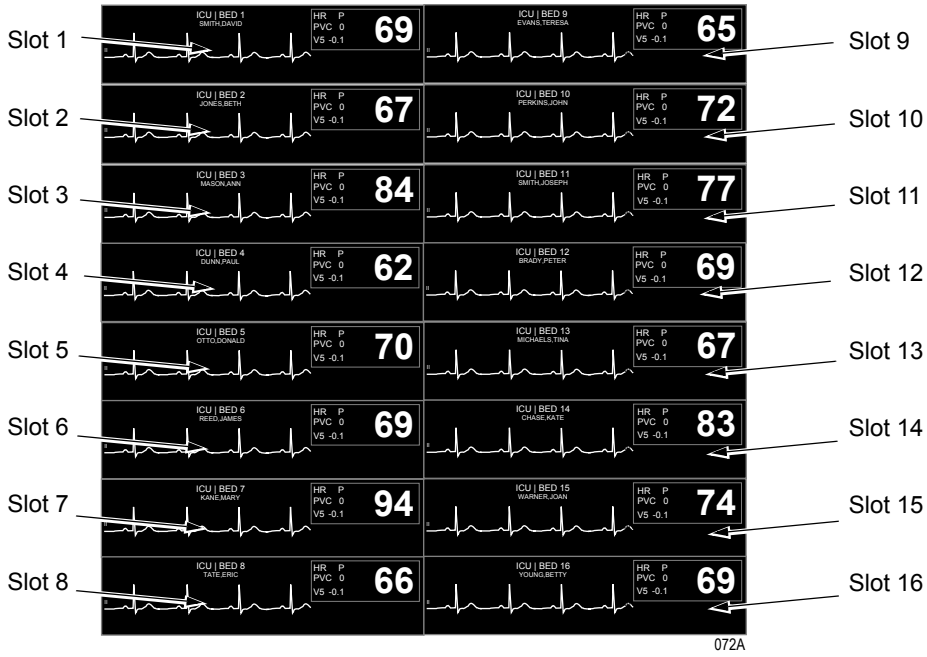
An alarm will sound when removing admitted beds from the display if the beds are not viewed on another CIC Pro.

To change the display format, follow these steps.

1. Click on the selection corresponding to the number of columns you want in the multiple patient viewer.
2. Click on the selection corresponding to the number of rows you want in the multiple patient viewer.
3. Visually verify in the map of the new display that the new setting is what you want.
4. Click *Apply* in the lower left corner of the *CIC Setup* window to apply your changes. The display updates immediately to reflect your changes.
5. Select *OK* to save your changes and close the *CIC Setup* window, or *Cancel* to close the window without making changes to the format.

Patient Window

The clinical information center identifies the patient windows and assigns an internal number in a top-to-bottom, left-to-right format. Refer to the figure below.



Example

Assume your CIC Pro's display is configured to show eight rows and two columns of patient slots (16 patient slots).

If you change the clinical information center display format to show four rows and two columns of patient slots (eight patient slots), you would "lose" patient slots 9 – 16, since the new configuration only accommodates the first eight patient slots (refer to the note on page 4-18).

Assigning Patients to Patient Slots

There are two ways to assign patients to the available slots on the clinical information center.

Admit Button

If the patient slot is empty, except for an *Admit* button, use the mouse to click anywhere in the slot. The single patient viewer for that patient slot opens, with the *Admit* tab sheet in front. Proceed with the Admit procedure as outlined in Chapter 7, "Admit/View a Patient".

Right-click Shortcut

Click the RIGHT mouse button anywhere in the slot you want to fill. The right-click shortcut menu opens. Slide the mouse over the *Select Care Unit then Bed Number* text, without pressing either mouse button. The text highlights, and a list of units on the network pops up. For more information, refer to "Viewing Other Patients" on page 7-16.

Screen Calibration

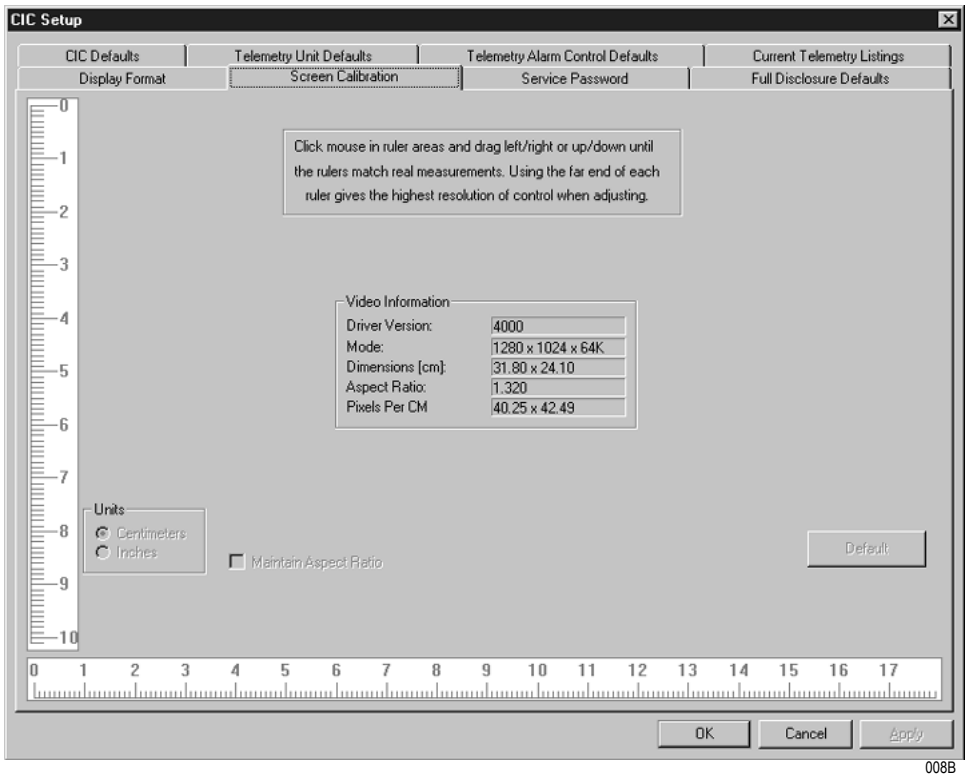
NOTE

In user mode, the *Screen Calibration* tab sheet is view-only. You must enter the service mode to perform the Screen Calibration procedure.

Screen calibration adjusts the gain and sweep speed of the displayed waveforms. Accurate sweep speed is important for all waveforms.

To open the *Screen Calibration* tab sheet:

1. Click on *Setup CIC* in the Main Menu.
2. Click on the *Screen Calibration* tab.



Screen Calibration Tab Sheet

For information on performing the screen calibration procedure, refer to the service manual.

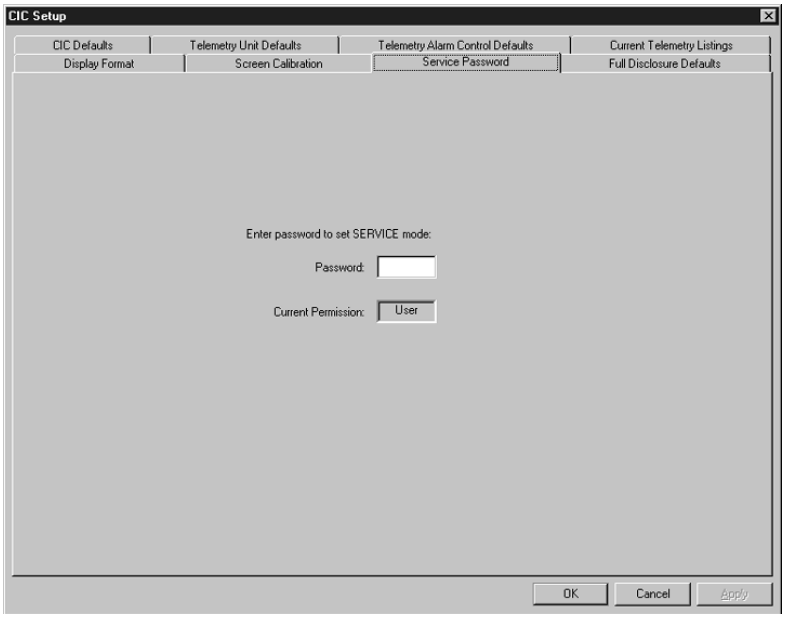
Service Password

CAUTION
The service mode is intended for use only by qualified personnel with training and experience in its use. The consequences of misuse include loss of alarm configuration, loss of patient data, corruption of the clinical information center operating system software, or disruption of the entire Unity network.

The *Service Password* tab sheet contains a field for entering the password for accessing the clinical information center's service mode.

To open the *Service Password* tab sheet:

1. Click on *Setup CIC* in the Main Menu.
2. Click on the *Service Password* tab.



Service Password Tab Sheet

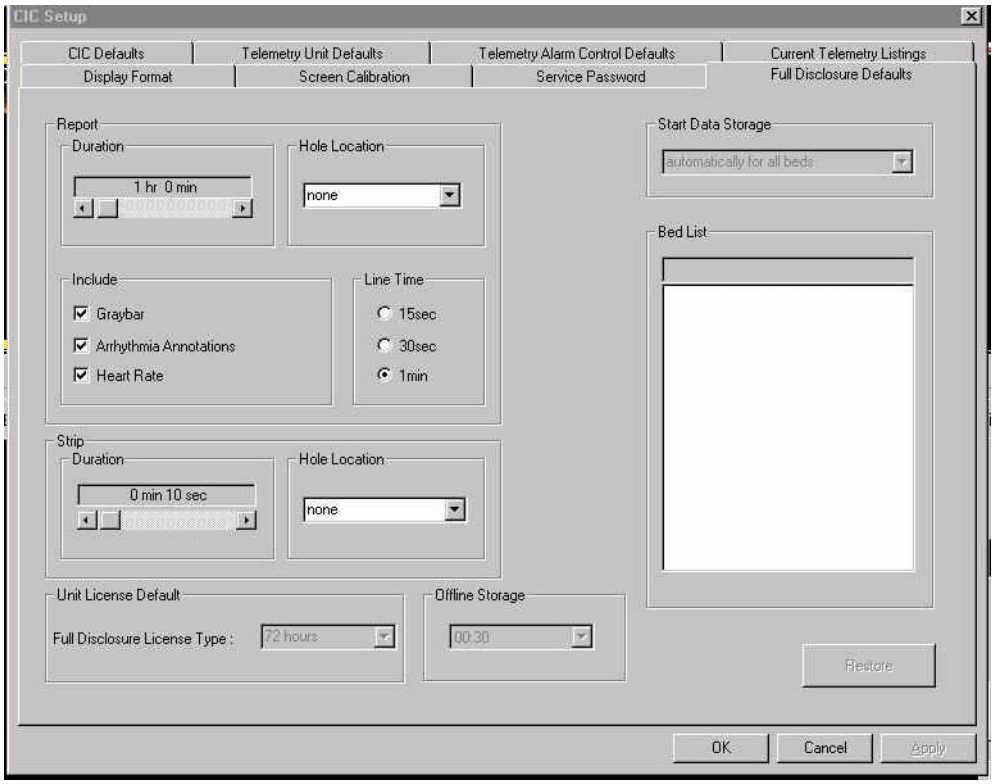
3. To change from the user mode to the service mode, use the keyboard to enter the service password, then click *Apply*. The *Current Permission* entry changes from *User* to *Service*.

NOTE
Contact your biomedical engineering department or your GE Medical Systems *Information Technologies* representative to access the service mode.

Full Disclosure Defaults

The *Full Disclosure Defaults* tab sheet allows you to view full disclosure settings. To open the *Full Disclosure Defaults* tab sheet:

1. Click on *Setup CIC* in the Main Menu.
2. Click on the *Full Disclosure Defaults* tab.



Full Disclosure Defaults Tab Sheet

Full Disclosure Controls

Report

DURATION—This control allows you to designate how much data is included in the report. The maximum report duration is 72 hours.

To set the report duration, place the cursor on the scroll bar below the *Report Duration* display field. Move the scroll bar to the left for shorter duration or to the right for longer duration.

HOLE LOCATION—This control allows space for binding printed reports. Options are *none, top, bottom, left,* and *right.*

Include

This control allows you to enable print characteristics. Options include *Graybar, Arrhythmia Annotations,* and *Heart Rate.* You may select all or none of these options.

- In *Graybar*, every other line of the report appears on a shaded background to provide visual differentiation from other lines.
- In *Arrhythmia Annotations*, the name of an applicable arrhythmia call appears underneath its occurrence in the report.
- In *Heart Rate*, the last active heart rate included in the report appears at the end of the report line.

Line Time

This control allows you to designate how much data shows on an individual report line. Choices are *15sec, 30sec,* and *1min.*

Strip

LOCATION—This control allows you to designate how much data is included in the strip. The maximum strip duration is 60 minutes.

To set the strip duration, place the cursor on the scroll bar below the *Strip Duration* display field. Move the scroll bar to the left for shorter duration or to the right for longer duration.

HOLE LOCATION—This control allows space for binding printed report strips. Options are *none, top, bottom, left,* and *right.*

Unit License Default

FULL DISCLOSURE LICENSE TYPE—This control shows a list of Full Disclosure license options. Choices are *none*, *24 hours*, *48 hours*, and *72 hours*.

NOTE

- If the default does NOT match the actual license, Full Disclosure does NOT work.
- If licenses are added to the system, the 1 hour licenses that were issued with the system are no longer available.

OFFLINE STORAGE—This control allows you to select a time period for the monitor to be off line before Full Disclosure data is deleted.

Start Data Storage

This control allows you to designate how full disclosure is enabled for patients at the time of admission. Choices are *automatically for all beds, automatically if listed,* and *manually*.

NOTE

In user mode, the *Start Data Storage*, *Bed List*, *Unit License Default: Full Disclosure License Type,* and *Offline Storage* controls are view-only. You must enter the service mode to modify these control settings.

Bed List

Bed List shows a listing of beds for which full disclosure data is automatically stored.

Full Disclosure Off-line Storage (Minute Rule)

The Full Disclosure Minute Rule exists as a precautionary measure when contact with a monitor has been lost. The feature is applied most often when the monitor is being used in the Rover application, since the monitor "roves" from room to room, on and off the network.

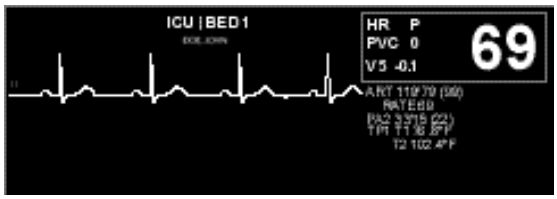
If a discharge/admit cycle occurs off the network for a bed that is being full disclosed, the Full Disclosure sub-system is unaware that the patient has changed. When the bed returns to the network, Full Disclosure will present the data from the discharged and admitted patients as part of the more recent patient's data. The Full Disclosure Minute Rule helps to prevent this by assuming that the patient has been discharged if the monitor is off the network for greater than the number of minutes selected with the *Offline Storage* control.

To modify an offline storage time period, follow these steps.

1. Use the mouse to click on the *Offline Storage* field. A down arrow icon is displayed next to the current offline time period.
2. Click on the down arrow to display a list of time periods and select the desired time period. Choices are 30 mins, 1, 2, 4, 8, and 12 hours.
3. A prompt appears. Select YES if you are sure you want to change the offline storage time. The offline storage menu closes, with the selected time remaining visible.

Bedside Status Messages

On the clinical information center display, there are up to 16 waveform slots which display information from up to 16 bedside monitors. If no information appears in a waveform slot, a message indicating the status of the bedside monitor displays.



064A

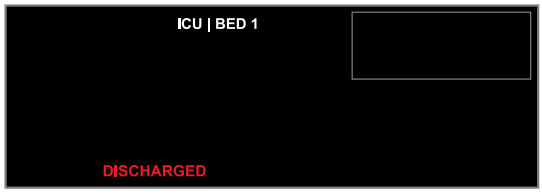
This waveform slot indicates that the bedside monitor is communicating with the clinical information center.

065A

NO COMM indicates there is no communication between a bedside monitor and the clinical information center. The bedside monitor may be turned off.

067A

NO PARAMETERS indicates there is no patient data to be sent. The bedside monitor has no module, or no cables are attached to the module.

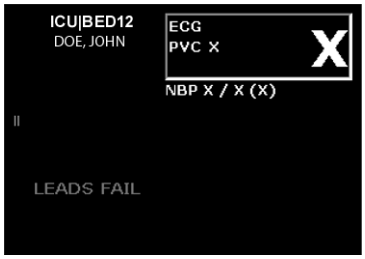


068A

DISCHARGED indicates that the bedside monitor is in discharged mode.

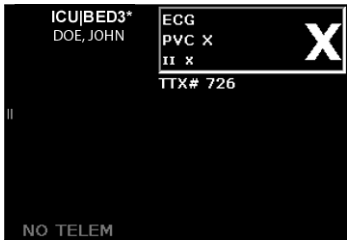
NOTE

If the bed number is unlocked, all discharged bed numbers are available for selection when *ADMIT* is selected in an empty patient slot.



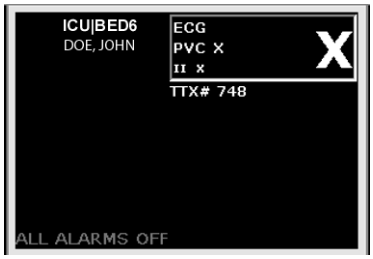
097A

LEADS FAIL indicates that the patient's leads are not transmitting data. Check the lead contact with the skin and that the leads are still plugged into the transmitter or the bedside monitor.



096A

NO TELEM indicates there is no communication between telemetry and the clinical information center. The telemetry system may be turned off.



095A

ALL ALARMS OFF indicates that the alarm feature is turned off (telemetry only).

NOTE

The unit name and bed number entered at both the CIC Pro and the bedside monitor must match exactly for communication between bedside monitor and a CIC Pro.

5 Printing

For your notes

Initiating and Stopping a Graph

Initiating a Graph

If you use the mouse to click on a patient's ECG parameter window (the small box in the upper right corner of the patient slot), a continuous graph initiates for the patient.

The DDW (Direct Digital Writer) prints patient data (generally referred to as a graph or graph strip). Data can also print to a laser printer.

NOTE

Full Disclosure and the *Vital Signs* tab sheet cannot print to a DDW. They must print to a laser printer.

When you use a bedside monitor, the bedside monitor's graph menu controls printing formats, including the waveforms graphed, graph speed, and graph location. Refer to the patient monitor's operator's manual.

When you use telemetry, the CIC Pro controls these functions.

Stopping a Graph

To stop a graph request that has been sent to a DDW, press the **GRAPH STOP** button on the DDW or click on the patient's ECG parameter window. This stops any graph already in process. If this key is pressed when no graph is in process, it advances the paper in the writer.

To stop a graph request sent to a laser printer, click on a patient's ECG parameter window.

Graph All Patients

NOTE

The *Graph All Patients* function is only available when no single patient view is open.

If a single patient view is open, selecting *Print* from the Main Menu initiates a printout of whichever tab sheet is in front.

The *Graph All Patients* command sends a graph request to all beds displayed on this clinical information center, initiating a 10-second graph for each admitted telemetry patient, and a 20-second graph for bedside monitor patients.

When you select this option for telemetry patients, graph requests always print at a speed of 25 millimeters per second. For bedside monitor patients, however, the graph prints at the speed selected at the monitor.

The *Graph All Patients* process stops automatically. If you press the **GRAPH STOP** control key on the external DDW, the current patient's graph stops and the writer begins to print a 10-second graph for the next patient.

If a patient's data is currently graphing or is being saved to graph when a *Graph All Patients* request is initiated, this patient's data is not included in the *Graph All Patients* graph. This patient's data graphs independently of the *Graph All Patients* graph.

Using the mouse to click on the ECG parameter window for a patient whose data is saving cancels the *Graph All Patients* request for that patient.

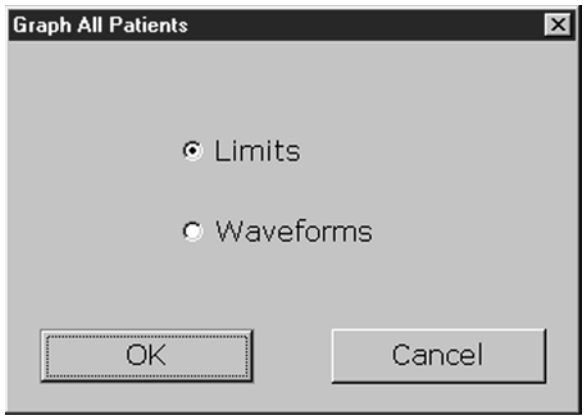
If, while a *Graph All Patients* request is running, an arrhythmia alarm sounds for a patient, the alarm data replaces the data that was saved for the *Graph All Patients* request.

If, while a *Graph All Patients* request is running, a telemetry patient initiates a graph from his or her telemetry transmitter, the *Graph All Patients* graph for that patient is replaced by a transmitter graph.

Initiating a Graph All Patients Request

To initiate a *Graph All Patients* request:

1. Click on the *Print* button in the Main Menu. The *Graph All Patients* window opens.



053A

Graph All Patients Window

2. Click on *Limits* or *Waveforms*.
   - Selecting *Limits* graphs all patient limits.

     NOTE

     The *Limits* function is active for telemetry patients only.
   - Selecting *Waveforms* graphs all patient waveforms.
3. Select *OK* to complete the Graph All Patients request.

Graph Paper Out Indicator

When there is no graph paper in the DDW (or the door is open), the message "*Graph Paper Out / Door Open"* displays at the top of the screen.

When printing to a laser printer, a similar status message displays if the printer is unable to print.

NOTE

Because the clinical information center can communicate with many manufacturers' laser printers, specific status messages are not documented in this manual.

Graph Location Settings

Graphs print at the graph locations specified in the patient's Graph Setup tab sheet. Upon admission of a patient, these locations are set from the unit defaults, but they can be modified if desired.

Following are guidelines for Graph Location:

- Manual graphs and print window requests print at the CIC Pro where the graph was requested, provided that CIC Pro has the same type of writer or printer as the graph location set for the patient for that type of graph. If the CIC Pro where the graph was requested does not have the same type of writer or printer, the graph prints to the patient's specified graph location.
- If a telemetry patient is duplicated on another CIC Pro, alarm graphs continue to print at the clinical information center where the patient was first displayed (admitted).
- If using the move feature, the patient's graph settings are retained as set on the original clinical information center.
- If a patient displays on a clinical information center that is not connected to a printer, the graph settings default to the graph location designated in the unit defaults. See "Telemetry Unit Defaults" on page 4-9.
- If no graph location is defined for a telemetry patient at the time of admission, the message "Saving" displays. Graphs are not sent to printers outside the unit.

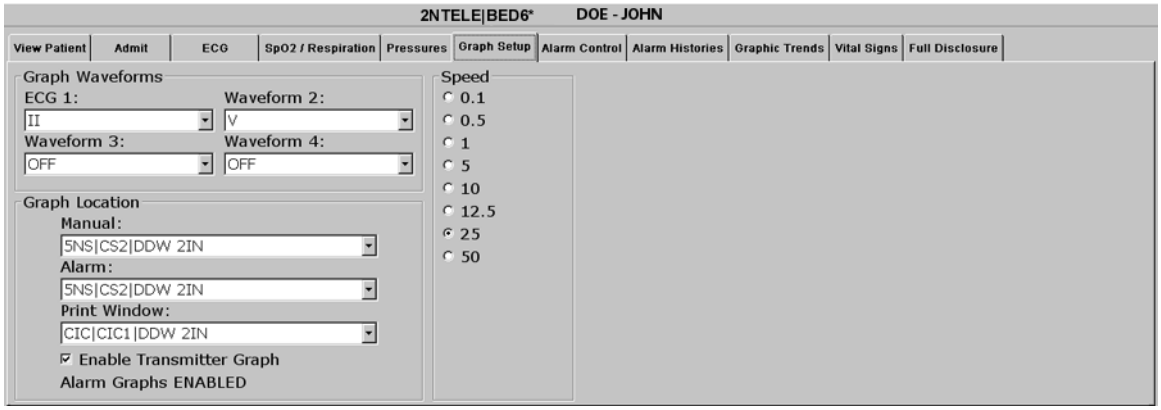
For more information on designating graph locations, please refer to "Graph Location Controls" on page 5-11.

Graph Setup Tab Sheet

The *Graph Setup* tab sheet allows you to define the waveforms to be graphed, change the graph location and speed, and turn the transmitter graph on and off (telemetry patients only).

To view a patient's *Graph Setup* tab sheet:

1. Click on the desired patient's information in the multiple patient viewer. The single patient viewer for that patient opens.
2. Click on the *Graph Setup* tab in the single patient viewer.



019C

Graph Setup Tab Sheet

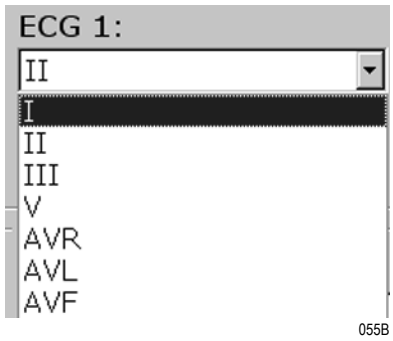
Graph Waveforms Controls

The *Graph Waveforms* controls allow you designate which waveforms should print in which positions on a patient's graph printout.

To designate which waveforms you want to print:

ECG 1 Control

1. Click in the *ECG 1:* field. A list of available ECG waveforms appears.



ECG 1 Menu

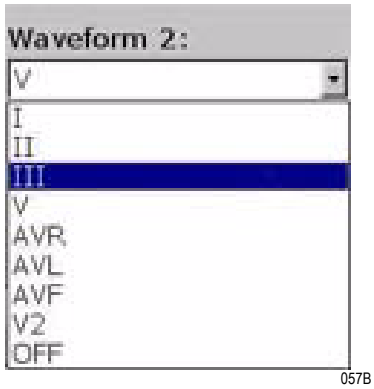
2. Click on the desired ECG waveform. The *ECG 1* menu closes, with the selected ECG Waveform name remaining visible. You can now designate other waveforms for printing.

NOTE

The primary ECG waveform in the patient slot will be updated to reflect the change made in the *ECG 1* control.

Waveform 2, Waveform 3, and Waveform 4

1. Click in the field for the waveform you wish to designate. A list of available waveforms appears.



Waveform 2 Menu

2. Click on the desired waveform. The waveforms menu close, with the selected waveform name remaining visible.

Graph Location Controls

The *Graph Location* controls allow you to set the print destinations for manual, alarm, and print window graphs.

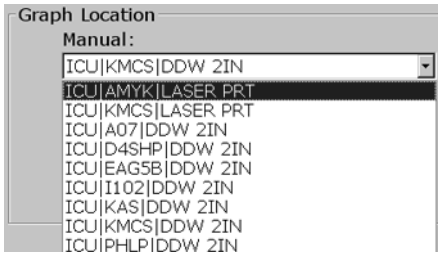
- A manual graph is one that is initiated by the user.
- An alarm graph is one that is triggered by the onset of a patient alarm condition.
- A print window graph is one that is initiated when the *Print* Main Menu button is pressed. Refer to "Graph All Patients" on page 5-4.

If you want to change a print location for a bedside monitor, the location is set at the bedside monitor, NOT at the CIC Pro.

Manual Graph Location

To designate where manual graph requests print:

1. Click in the *Manual:* field. A list of available printers appears.



Manual Graph Location Menu

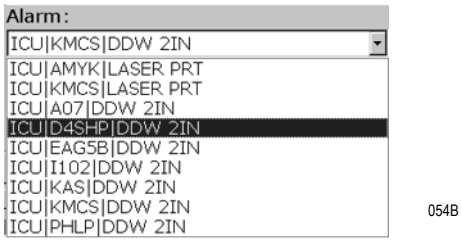
2. Click on the desired printer. The printers menu closes, with the selected printer name remaining visible. You can now designate other print destinations.

Alarm Graph Location

To designate where alarm graphs print:

NOTE
You can set each patient's alarm graph location individually.

1. Click in the *Alarm:* field. A list of available printers appears.



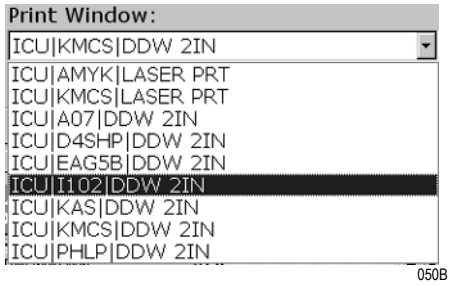
Alarm Graph Location Menu

2. Click on the desired printer. The printers menu closes, with the selected printer name remaining visible. You can now designate other print destinations.

Print Window Graph Location

To designate where print window graph requests print:

1. Click in the *Print Window:* field. A list of available printers appears.



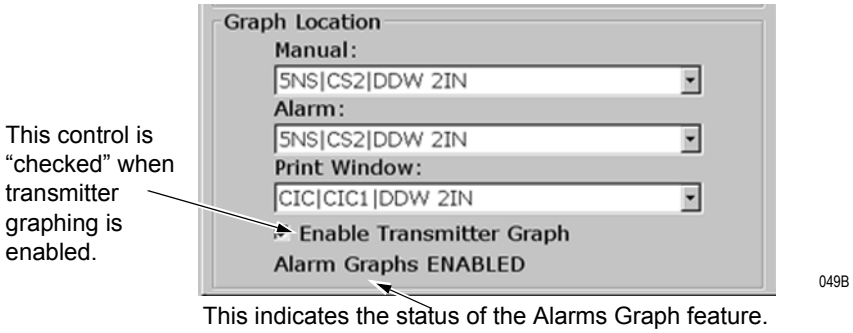
Print Window Location Menu

2. Click on the desired printer. The printers menu closes, with the selected printer name remaining visible. You can now designate other print destinations.

Enable Transmitter Graph

Transmitter graphing can be initiated from the telemetry transmitter box. Please see the *ApexPro Operator's Manual* for further instructions.

The *Enable Transmitter Graph* control allows you to turn on/off transmitter graph printing. When selected, transmitter graphing is turned on. When deselected, transmitter graphing is turned off.



NOTE

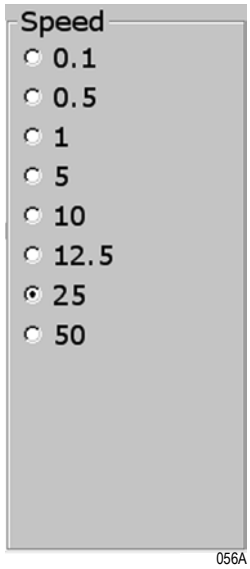
The *Enable Transmitter Graph* control is active for telemetry patients only. For more information, refer to the telemetry system's operator manual.

Alarm Graphs Status Indicator

The *Alarm Graphs* status indicator reflects the status for the Alarm Graphs feature. This function is configurable in Telemetry Unit Defaults, and cannot be changed on a per-patient basis.

Graph Speed Controls

The *Speed* controls allow you to adjust the graph printing speed.



Speed Control Menu

To adjust the graph printing speed, click on the desired speed. Changes take effect immediately.

Laser Printer

NOTE
The clinical information center must be formatted to print to a laser printer at the time of system installation. Refer to the service manual for more information.

You can connect a laser printer to the back of the clinical information center. (Refer to the service manual for more information on printer connections.) You must configure the print window location for bedside monitoring from the GE bedside monitor. (For more information on printing to the laser printer via the bedside monitor, refer to the appropriate operator's manual.)

Printing to a laser printer for a telemetry patient may be configured on an individual basis or be set up as a unit default. For more information, refer to the telemetry system's operator manual.

You can send all information that can currently be formatted for the 2-inch DDW to a laser printer at the clinical information center. The laser printer at the clinical information center can print more information than is currently provided on the 2-inch printers.

To graph information to a laser printer at the clinical information center, select the laser printer under the Graph Location controls in the Graph Setup tab sheet.

The types of information that can be printed on a laser printer may include:

- Graphic trends,
- Vital signs,
- 12-lead ECG,
- Non-real time windows,
- Histories, and
- Full disclosure information. Due to the enormity of full disclosure reports, a separate printer is recommended.

NOTE
Full Disclosure and the *Vital Signs* tab sheet can only print to a laser printer.

For your notes

6 Alarm Control

For your notes

Alarm Structure

The alarm structure of the clinical information center is divided into two classifications:

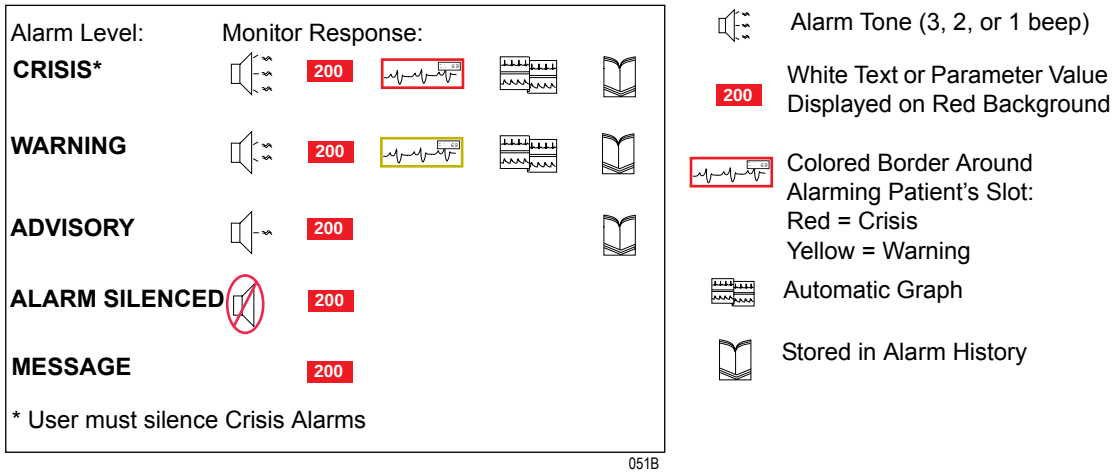
- Patient Status Alarms, and
- System Status Alarms.

Within each classification there are levels which correlate to how severe the condition is that causes the alarm. The levels and how the clinical information center responds to each are described below.

Patient Status Alarms

Patient status alarms are triggered by a patient condition which exceeds parameter limits, or by an arrhythmia condition. Patient status alarms provide the highest priority information.

The levels within the Patient Status Alarm category and how the CIC Pro responds to each are shown in the following chart. The chart begins with the most critical type of alarm (Crisis) and ends with the least critical type of alarm (Message).



Patient Status Alarms Chart

Parameter and arrhythmia alarm levels are, from most critical to least critical, Crisis, Warning, Advisory, and Message.

Each alarm level elicits a specific response from the clinical information center. The four alarm levels are configurable. This means that an alarm can be moved from one category to another if the default is not satisfactory to your situation.

NOTE

ASYSTOLE and VFIB/VTAC alarms cannot be moved from the Crisis level at the clinical information center.

Colored Window Borders

Crisis and warning alarms are indicated with a large border around the individual patient's window in the multiple patient viewer. This border flashes on/off several times when the alarm occurs before staying on. The color of the border indicates the severity of the alarm:

- Red indicates a crisis alarm, and
- Yellow indicates a warning alarm.

This is consistent with standard GE Medical Systems *Information Technologies* Unity network alarms. When the alarm is silenced, the colored border reverts to the black background.

NOTE

No alarms other than Crisis or Warning activate the colored border.

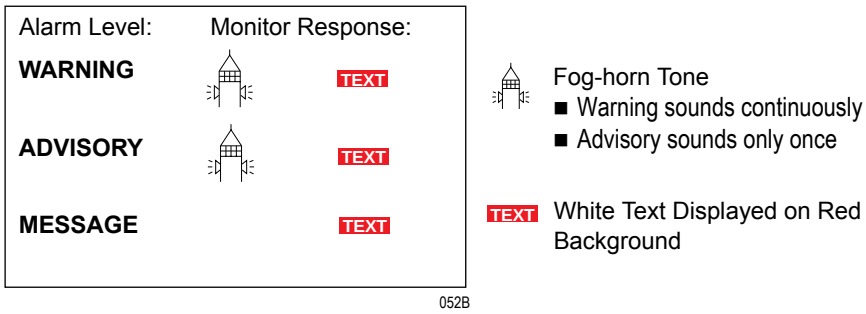
Patients selected for single patient view have a white border in the multiple patient viewer.

End of Event Graphing

Alarm graphs continue to run until the end of the event. The printer prints 10 seconds before the event and stops when the patient returns to a normal rhythm. If a printer is not available at the time of the event, a 20 second graph is saved. This saved graph prints when a printer is available.

System Status Alarms

System status alarms are triggered by mechanical or electrical problems and are of lesser priority than patient status alarms. The levels within the System Status Alarm category and how the clinical information center responds to each are shown in the following chart.



System Status Alarms Chart

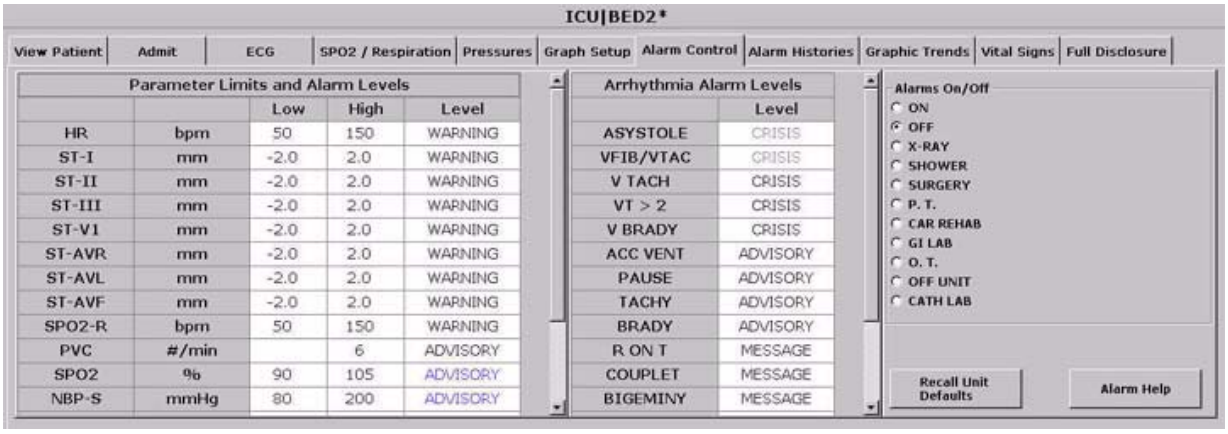
System status alarms cannot, in most cases, be moved from one level to another. However, the CIC Pro allows you to set default alarm levels for telemetry patients for the following system alarms: CHANGE BATTERY, OFF NETWORK, ARR SUSPEND, LEADS FAIL, and PROBE OFF.

The *System Alarm Levels* are configurable in Telemetry Alarm Control Defaults.

Alarm Control Tab Sheet

A patient's alarm settings can be reviewed, modified, and printed at the clinical information center. To view a patient's alarm settings, follow these steps.

1. Use the mouse to click on the desired patient's information in the multiple patient viewer. The single patient viewer for that patient opens.
2. Use the mouse to click on the *Alarm Control* tab in the single patient viewer. The *Alarm Control* tab sheet moves to the front.



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Alarm Control Tab Sheet

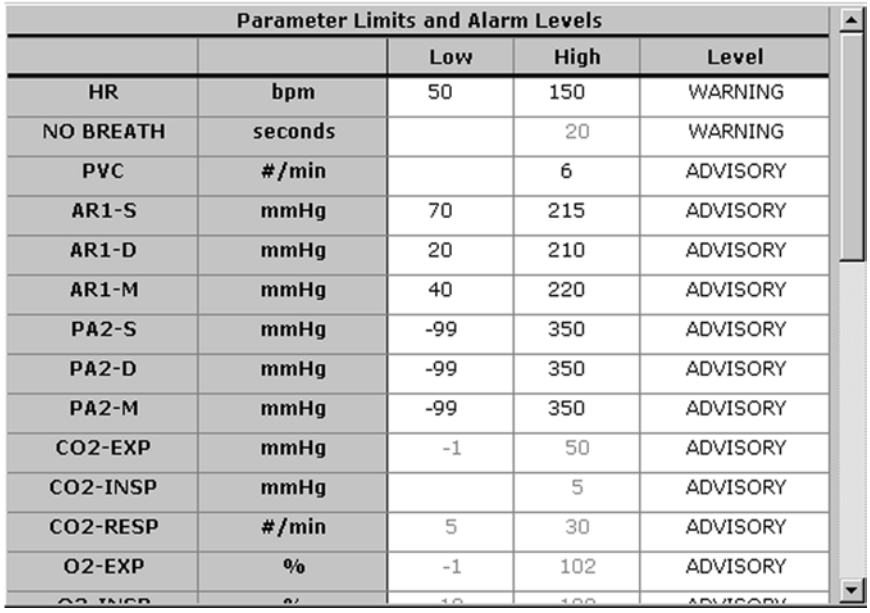
The Alarm Control tab sheet provides controls for *Parameter Limits and Alarm Levels, Arrhythmia Alarm Levels, Alarms On/Off* reasons and *Enable Transmitter Pause.*

NOTE

The *Alarms On/Off* reasons controls are active for telemetry patients only. For more information, refer to the telemetry system's operator manual.

Parameter Limits and Alarm Levels

The *Parameter Limits and Alarm Levels* controls allow you to view and modify the limits and alarm settings for a patient's monitored parameters.



Parameter Limits and Alarm Levels				
		Low	High	Level
HR	bpm	50	150	WARNING
NO BREATH	seconds		20	WARNING
PVC	#/min		6	ADVISORY
AR1-S	mmHg	70	215	ADVISORY
AR1-D	mmHg	20	210	ADVISORY
AR1-M	mmHg	40	220	ADVISORY
PA2-S	mmHg	-99	350	ADVISORY
PA2-D	mmHg	-99	350	ADVISORY
PA2-M	mmHg	-99	350	ADVISORY
CO2-EXP	mmHg	-1	50	ADVISORY
CO2-INSP	mmHg		5	ADVISORY
CO2-RESP	#/min	5	30	ADVISORY
O2-EXP	%	-1	102	ADVISORY

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Parameter Limits and Alarm Levels Controls

NOTE

Alarms are always sorted in a top-to-bottom, highest-to-lowest priority. When you change a level, the list is resorted to reflect the change in alarm priority.

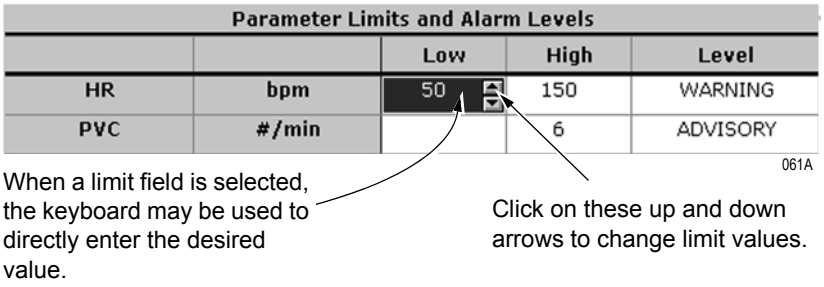
Modifying Parameter Limits

To modify a parameter's low or high limit:

NOTE

The alarm limits for some parameters cannot be changed. Alarm limits that cannot be changed always appear dimmed. Fields that are not dimmed can be selected for editing.

1. Use the mouse to click on the *Low* or *High* field for the parameter you are modifying. The field is then framed by a rectangle, and up and down arrow buttons appear in the field.



NOTE

Parameter limits are usually shown in black type. If a parameter limit is shown in blue, this indicates that the shown level *is not* the default value.

2. To increase or decrease the limit by 1 or 5 (depending upon the parameter selected), click on the up or down arrow button.

   To increase or decrease the limit in increments other than 1 or 5, use the keyboard to enter a new limit value.

3. When you are satisfied with the new limit value, use the mouse to click outside the just-modified field in the single patient viewer. This activates your change. You can now modify another limit.

4. When you are finished making changes in the Alarm Control tab sheet, click on the *Close* button in the bottom right corner of the display to close the single patient viewer.

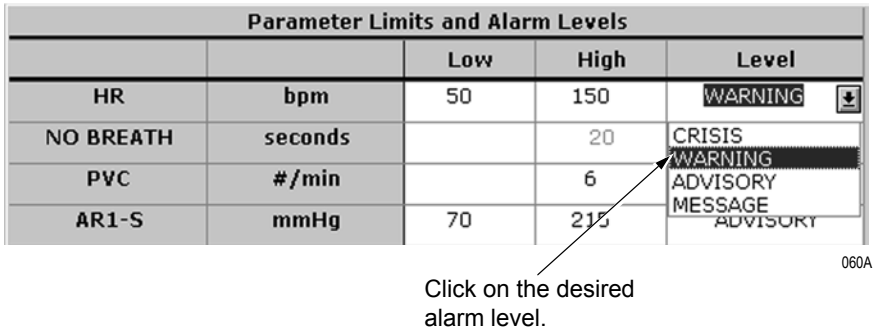
Modifying Parameter Alarm Levels

To modify a parameter's alarm level:

1. Click on the *Level* field for the parameter alarm level you are modifying. A down arrow icon is displayed next to the parameter's current alarm level.
2. Click on the down arrow to display a list of alarm level selections.

   NOTE

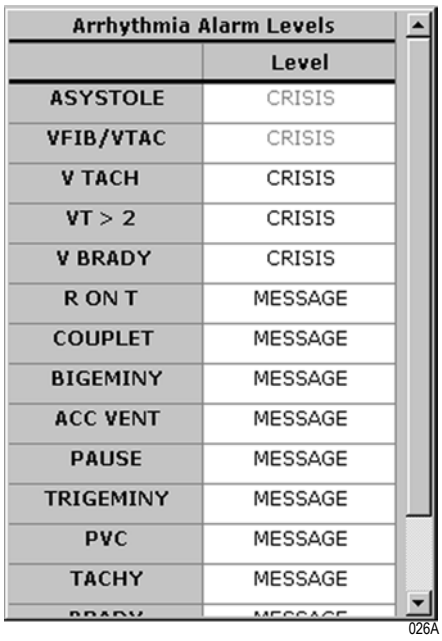
   Alarm levels are usually shown in black type. If an alarm level is shown in blue, this indicates that the shown level *is not* the default value.



3. Click on the desired alarm level. The alarm level menu closes, with the selected alarm level remaining visible. You can now modify another parameter's alarm level.
4. When you finish making changes in the *Alarm Control* tab sheet, click on *Close* in the bottom right corner of the display to close the single patient viewer.

Arrhythmia Levels

The *Arrhythmia Alarm Levels* controls allow you to view and modify a patient's arrhythmia alarm levels.



Arrhythmia Alarm Levels Controls

Modifying Arrhythmia Alarm Levels

To modify an arrhythmia alarm level, follow these steps.

1. Use the mouse to click on the *Level* field for the arrhythmia alarm you are modifying. A down arrow icon is displayed next to the current arrhythmia alarm level.

   NOTE

   You cannot change the arrhythmia alarm levels for ASYSTOLE and VFIB/VTAC. Therefore, the text in the level fields for these alarms always appears dimmed.

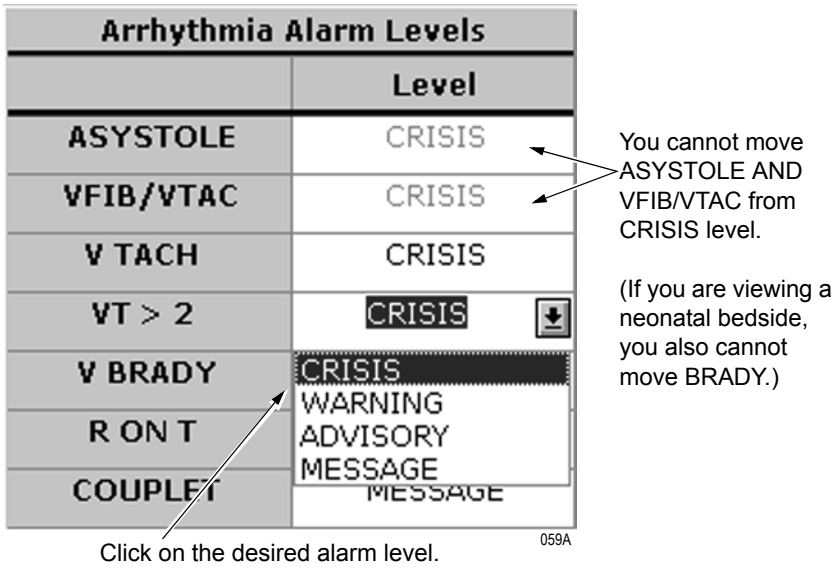
   If you are viewing a neonatal bedside, you cannot change the arrhythmia alarm levels for BRADY, ASYSTOLE and VFIB/VTAC. Therefore, the text in the level fields for these alarms always appears dimmed.

   If you click on the right side of the level field, the down arrow button and a popup list of selections may appear simultaneously.

   It may be necessary to use the scroll bar on the right side of the *Arrhythmia Alarm Levels* controls in order to view the appropriate arrhythmia alarm.

   Alarm levels are usually shown in black type. If an alarm level is shown in blue, this indicates that the shown level *is not* the default value.

2. Click on the down arrow to display a list of alarm level selections.



3. Click on the desired alarm level. The alarm level menu closes, with the selected alarm level remaining visible. You can now modify another arrhythmia's alarm level.
4. When you finish making changes in the *Alarm Control* tab sheet, click on *Close* in the bottom right corner of the display to close the single patient viewer.

Alarms On/Off Reasons

The *Alarms On/Off* reasons controls are active for telemetry patients only. For more information, refer to the telemetry system's operator manual.

Enable Transmitter Pause

The *Enable Transmitter Pause* control is active for telemetry patients only. For more information, refer to the telemetry system's operator manual.

Alarm Pause Breakthrough Indicator

The *Alarm Pause Breakthrough* indicator reflects the status of the Alarm Pause feature. This function is configurable in Telemetry Unit Defaults, and cannot be configured on a per-patient basis.

Printing Alarm Settings

A telemetry patient's *Alarm Control* tab sheet can be printed, showing all current alarm settings and limits. To initiate a printout of a patient's *Alarm Control* tab sheet, use the mouse to click on the *Print* button in the Main Menu.

NOTE

This feature is active for telemetry patients only. For more information, refer to the telemetry system's operator manual.

Silencing Alarms

WARNING
Do NOT continuously press the silence key. You may inadvertently silence new patient alarms.

You can silence the audible alarm tones in one of two ways:

- Use the mouse and click on the *Silence Alarms* button located on the display monitor's screen.

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- Press the **Silence Alarms** key located on the keyboard.

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Alarm Silence Icon

When the CIC requests a bedside to silence alarms, a hollow alarm silence icon will appear. When the bedside responds that alarms are silenced, the icon will become solid. Message type alarms do not silence, therefore, the hollow icon will remain.

The alarm silence icon displays in the ECG parameter window next to the ECG heart rate. The alarm silence icon remains on the display for one minute unless a new alarm occurs.

119A
Hollow Icon

118A
Solid Icon

The alarms remain silent for one minute unless the alarm condition is resolved.

NOTE

- You cannot silence patients one at a time.
- If you are monitoring a bedside monitor, new alarms of any priority level break the alarm silence condition.
- If you are monitoring telemetry patients, new alarms of equal or greater priority level break the alarm silence condition.
- Monitors that are silenced at the bedside will also show an alarm silence icon at the CIC.

For your notes

7 Admit/View a Patient

For your notes

Admitting a Patient

Ways to Monitor

There are four ways to monitor patients with GE Medical Systems *Information Technologies* bedside monitors: Standard, Combo, Rover, and Rover Combo. The chart below outlines the features and requirements of each.

Table 1. Monitoring Methods

Monitor's Admit Menu (accessed from within Service menu)	ECG source	Network connection required?	Accommodates telemetry?
Standard	Bedside monitor	For stand-alone monitoring: No For monitoring at a clinical information center: Yes	No
Combo	Bedside monitor and telemetry transmitter	Yes	Yes
Rover	Bedside monitor	Yes	No
Rover Combo	Bedside monitor and telemetry transmitter	Yes	Yes

At the time your system is installed, it is determined which monitoring application applies. At that time a menu option in the bedside monitor's service menu is used to set the bedside monitor for STANDARD, ROVER, COMBO, or ROVER COMBO.

For the four different kinds of monitoring, the admit procedure depends on how the monitor is to be used.

Standard and Rover Admit Instructions

Instructions for admitting patients using the Standard and Rover monitoring applications are included in this chapter.

Combo and Rover Combo Admit Instructions

Because Combo and Rover Combo monitoring applications can use telemetry, their Admit instructions are documented in the telemetry system's operator manual.

Admitting Telemetry Patients

Refer to the telemetry system's operator manual for information on admitting telemetry patients.

NOTE

- The ApexPro telemetry system software 3.*x* is only compatible with CIC Pro software version 4.*x*.
- The ApexPro telemetry system software 1.7 and 2.*x* is compatible with CIC Pro software version 3.*x*.
- The ApexPro telemetry system software 1.*x* is compatible with CIC Pro software version 2.*x*.
- The ApexPro telemetry system is not compatible with versions of CIC Pro software earlier than 2.*x*.

Admit Instructions

To admit a bedside monitor patient to the clinical information center, follow these steps.

NOTE
These admit instructions apply to bedside monitors using both the standard and rover monitoring applications.

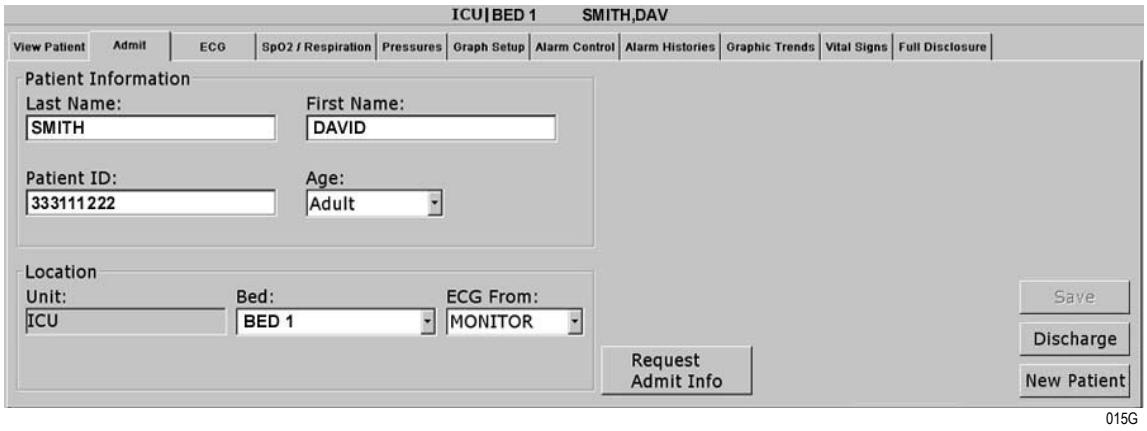
1. Select a patient window from the multiple patient viewer that is blank except for an *Admit* button.

Empty Window in Multiple Patient Viewer

   If there is no such window shown in the multiple patient viewer, use the mouse to click on the *Auto Display* button in the Main Menu. The multiple patient view reconfigures to accommodate empty patient windows.

2. Use the mouse to click on the *Admit* button or anywhere in the empty patient window.

   The single patient viewer for this window opens, with the *Admit* tab sheet at the front of the stack.



Admit Patient Tab Sheet

3. Select the desired bed number by using the mouse to click on the down arrow that appears to the right of the *Bed:* field. A popup list of beds in the unit appears. Click on your choice to select it.

   The bed number selection will not change if the bed number is locked. (Refer to "Locked or Unlocked Beds" on page 1-15 for more information on locked beds.)

4. Select the *Request Admit Info* option. If HL7 admit data is available on a MUSE system or QS system, the appropriate fields on the *Admit* tab sheet will be populated with data from those devices.

5. After selecting the bed number and requesting admit information, select the source of the ECG in the *ECG From:* field. Use the mouse to click on the down arrow at the right of the field, and a popup list of choices will appear. Click on your choice to select it.

6. You can enter patient information by clicking in the various patient information fields, typing in the information, and then tabbing into or clicking in the next field.

   NOTE

   Patient information entered here may be truncated on the CIC Pro display based on limitations of the associated monitoring device.

   The patient information that can be entered is: *Last Name, First Name, Patient ID,* and *Age.*

   - *Last Name, First Name,* and *Patient ID* are entered using the keyboard or the *Request Admit Info* button. When entering information with the keyboard, click or tab into the field before typing the information. Press the backspace key to delete characters when changing or correcting the patient's name or ID number.

NOTE

A Patient ID must be entered to access patient information from the Patient Data Server (PDS).

- *Age* appears as a popup list of selections. Click on the down arrow to the right of the field to open the list. Click on your choice to select it.

Age Popup Menu

You do NOT have to enter this information in order to admit a patient. The only fields that are mandatory to admit a patient are the *Bed* and *ECG From* fields. If information is entered here, however, be sure that it is entered accurately and that you do not use the patient ID number of an already-admitted patient.

7. Once you have entered all the patient information desired, click on the *Admit* button in the lower right corner of the tab to admit the patient.

NOTE

If the Full Disclosure is set for manual mode, a prompt appears asking "*Would you like to start Full Disclosure*?" Select *Yes* or *No* to complete the admit process. Full Disclosure can be stopped or started at any time by selecting the *Stop/Start FD* button found in the *Full Disclosure* tab sheet.

Special Considerations for Rover Monitoring

IMPORTANT – When using the Rover monitoring application, you must complete the following steps in sequence.

Pre-Admission Protocol

1. Store the bedside monitor with the power supply off.
2. Bring the monitor into the desired room.
3. Connect the monitor to the network.
4. Plug the power cord into the wall outlet.
5. Turn the power on via the power toggle switch located at the back of the monitor on the power supply.
6. Verify *Unit Name* and *Bed Name*. The choices automatically appear on screen after the monitor is turned on if it has been off the network for more than two minutes.

   NOTE

   Allow time for the monitor to be identified by the network (this usually takes at least 30 seconds).

7. Admit accordingly.

Discharge and Monitor Removal Protocol

1. Discharge the patient from the monitor.
2. Turn the power off via the power toggle switch located at the back of the monitor on the power supply.
3. Unplug the power supply from wall outlet.
4. Disconnect the monitor from the network.
5. "Rove" or store the monitor to the desired location.

Rover Admit/Discharge Menu

1. Use the mouse to click in an available patient window. The single patient viewer for that bed opens. The *Admit* tab sheet is at the front.

Admitting Patients from the Clinical Information Center

2. Select *Bed #* from the patient's *Admit* tab sheet. (If the bed is locked, there is no need to select the bed number from the *Admit* tab sheet.)
3. Select *ECG From*. Highlight the appropriate ECG source.
4. Admit the patient according to the admit procedures outlined earlier in this chapter.

Discharging a Patient

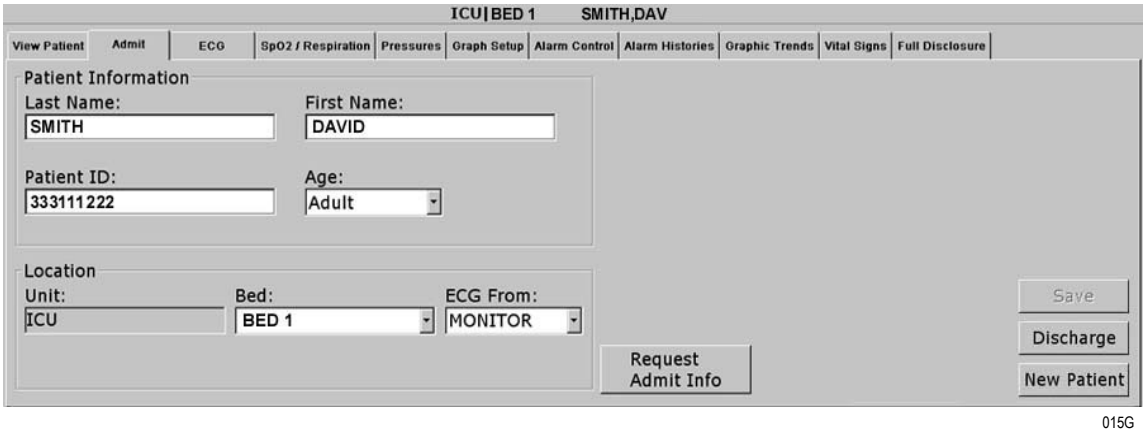
Performing the discharge procedure at the clinical information center

- discharges bedside monitor patients from the clinical information center and from the bedside monitor; and
- discharges telemetry patients from the clinical information center.

Discharge Procedure

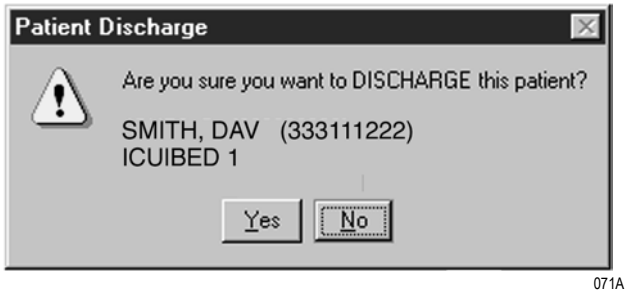
To discharge a patient, follow these steps.

1. At the clinical information center, use the mouse to click on the bed window of the patient to be discharged. That patient's single patient viewer opens.
2. Use the mouse to click on the *Admit* tab to bring the tab sheet to the front.



Admit Patient Tab Sheet

3. Use the mouse to click on the *Discharge* button in the lower right corner of the tab sheet. The dialog window shown below appears on the display.



Patient Discharge Dialog Window

4. Use the mouse to click *Yes* or type the letter *Y* on the keyboard if this is the patient to be discharged. All patient information clears.

   While the information clears, the message *"Discharging patient…"* appears briefly on the *Admit* tab sheet.

The single patient viewer closes, and the display returns to the multiple patient viewer.

- If the just-discharged patient was a telemetry patient and the slot is locked, the patient window shows the message *DISCHARGED* at the bottom of the window. If the telemetry bed is not locked, the *DISCHARGED* message disappears and an *ADMIT* button appears in the window.
- If the just-discharged patient was a bedside monitor patient, the bed remains shown in the multiple patient viewer and the message *DISCHARGED* is shown at the bottom of the window.

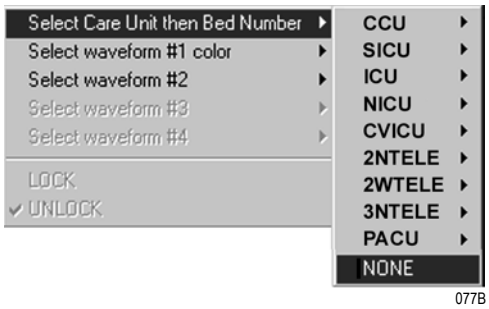
Clearing a Patient Window

To clear discharged patient information from the window and bring up the *Admit* button, use the right-click shortcut menu.

1. Use the RIGHT mouse button to click anywhere inside a bed window. A shortcuts window appears.

   NOTE

   You must use the right mouse button to access this shortcuts window.



Right-Click Menu — Select NONE

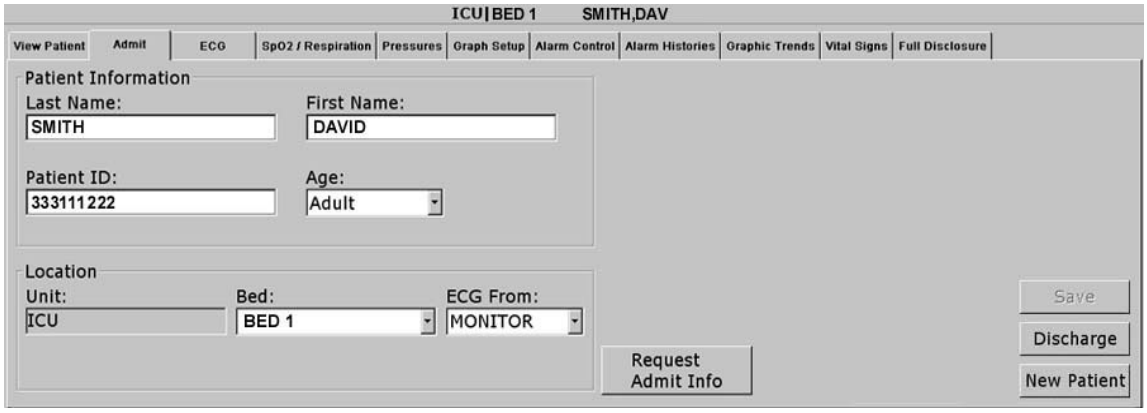
2. Slide the mouse over the *Select Care Unit then Bed Number* text, without pressing either mouse button. The text highlights, and a list of units on the network pops up.
3. Without pressing either mouse button, slide the mouse pointer to LEFT mouse button on *None.*
4. The popup list closes, and the patient window in question is now empty, except for an *Admit* button.

New Patient

This option is only available for *Telemetry Beds* and *Tele Combo* type patients. It is located on the *Admit* tab sheet on the CIC Pro. It allows the user to discharge a patient and admit a new patient, while keeping the same bed number and transmitter ID number.

To discharge then admit a patient, follow this procedure:

1. At the CIC Pro, click on the bed window of the patient you wish to discharge. The display rearranges to accommodate the single patient viewer at the bottom of the display.
2. Click on the *Admit* tab to bring the tab sheet to the front.
3. Click on *New Patient* in the lower right corner of the tab sheet.
4. Click on *Yes*, or type the letter **Y** on the keyboard, if this is the patient you wish to discharge. The CIC Pro automatically discharges the old patient and allows the user to enter a new patient to the patient bed slot. The transmitter ID stays in that slot so that the new patient can be admitted to the same transmitter.



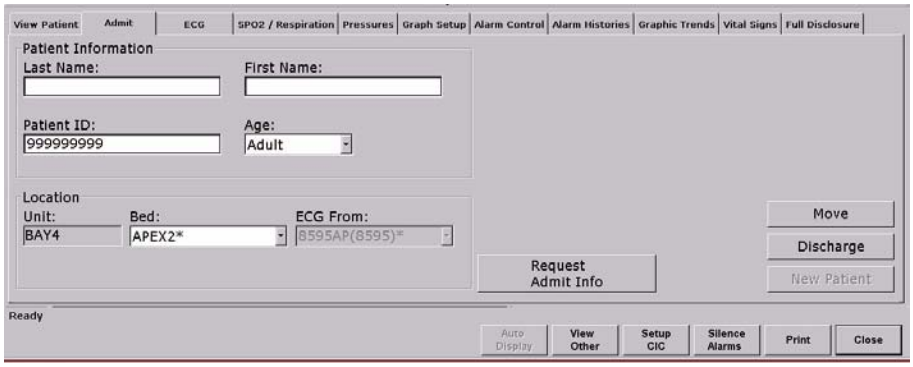
Admit Patient Tab Sheet

Move Telemetry Patients

This option allows you to move a telemetry patient to a new bed within the same care unit or to move Combo patients in and out of combo mode. The Move feature is located on the *Admit* tab sheet on the CIC Pro.

To move a patient within the same care unit, follow this procedure:

1. At the CIC Pro, select the bed window of the patient you wish to move.
2. Click on the *Admit* tab to bring the tab sheet to the front.
3. Select a new bed from the *Location Bed:* list.
4. The *Save* button changes to *Move*, click *Move* to move the patient to the bed you selected from the bed list.
5. Select *Yes* when the Patient Move dialog is displayed.



Admit Patient Tab Sheet

A patient can not be moved to an unlocked bed if no bed slot is available. A dialog window appears indicating that the change is disallowed because the patient would be unmonitored.

Moving Locked/Unlocked Beds

The following guide lines apply when moving locked and unlocked beds.

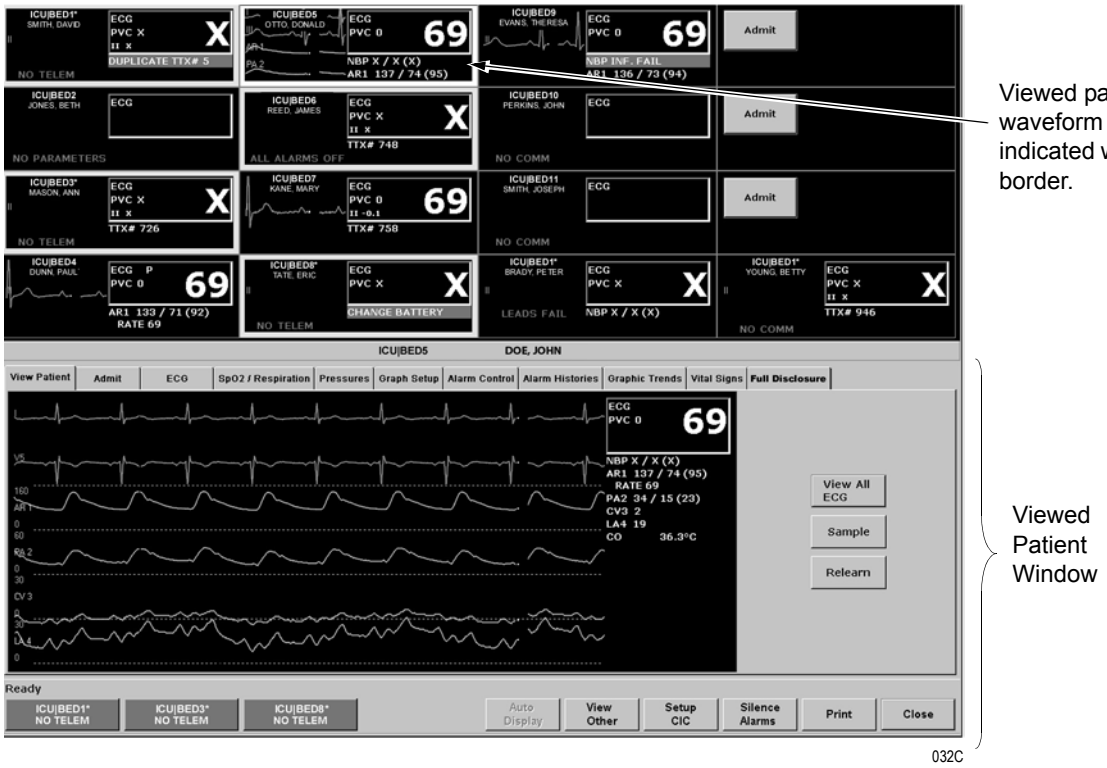
- A patient can be moved from an unlocked bed to another available unlocked bed.
- A patient can be moved from a locked bed to another available locked bed.
- A patient can be moved from an unlocked bed to an available locked bed.

Viewing a Patient

When you wish to see detailed information about a patient's status, you can use the *View Patient* tab in the single patient viewer.

To access the *View Patient* tab, follow the instructions below.

1. Use the mouse to click in the bed window of the patient you wish to view. The single patient viewer for that patient opens.
2. Use the mouse to click on the *View Patient* tab to bring it to the front.



Clinical Information Center Single Patient Viewer

View Patient Tab Sheet

The *View Patient* tab sheet shows all the information that normally appears in patient's bed window in the multiple patient viewer, but also displays additional parameter information and waveforms that space confines of the multiple patient viewer did not permit.

There are three buttons in the *View Patient* tab sheet. Their functions are described below.

View All ECG/Monitor

Using the mouse to click on the *View All ECG* button temporarily changes the displayed waveform set to one containing ECG leads I, II, III, V, aVR, aVL, and aVF.

NOTE

The *View All ECG* button is dimmed when viewing telemetry patients because telemetry patients normally display all ECG waveforms.

After the *View All ECG* button is selected, its label text changes to *View All Monitor*. Click on the *View All Monitor* button to return to the normal view.

Sample

Using the mouse to click on the *Sample* button records a sample of the patient's real-time ECG data. This sample is then stored in alarm histories, and can be viewed in the *Alarm Histories* tab, under the title of *Sample*. For more information about viewing alarm histories, refer to Chapter 8, "Alarm Histories".

Relearn

Using the mouse to click on the *Relearn* button initiates a relearn of the patient's ECG rhythm. The relearn takes only a few seconds, and is nearly unnoticeable. The patient's heart rate reading appears as Xs momentarily, and then is replaced by numerics once the relearn is complete.

You should use the relearn function whenever there has been a significant change in the patient's rhythm.

Viewing Other Patients

To access the menus of a patient on the network that is not displayed at your clinical information center, use the *View Other* button.

NOTE

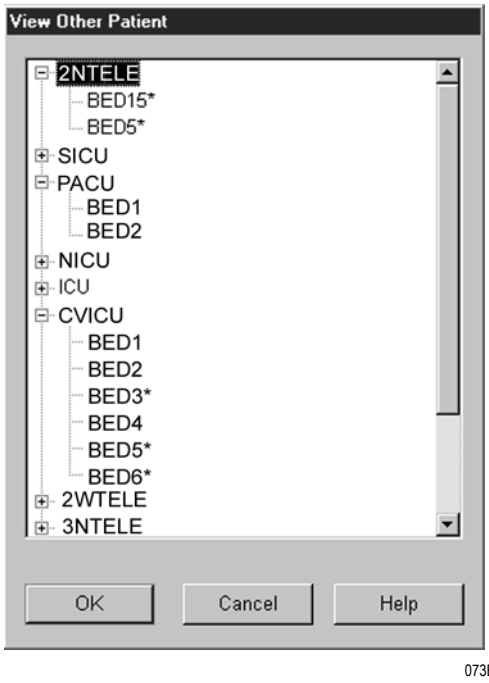
When viewing a patient from another unit, you cannot make any changes to the patient's information or settings.

View Other Button

1. Use the mouse to click on the *View Other* button in the Main Menu at the bottom of the clinical information center display.

Main Menu Buttons

2. The *View Other Patient* window appears. This window displays all the units currently available on your network.



View Other Patient Window

3. Use the mouse to click on the ⊞ next to the unit from which you wish to view a bed. A list of beds admitted to that unit appears below the unit name.
4. Use the mouse to click on the bed name you wish to view. The name appears highlighted.
5. Use the mouse to click on the *OK* button. The single patient viewer opens at the bottom of the display, showing the viewed patient's data.

Viewing Patients Through Alarm Condition Indicators

You can open the single patient viewer for any patient in your care unit who is experiencing an alarm condition.

When a patient experiences an alarm condition, a red button appears at the bottom of the clinical information center display. The button contains the unit name and bed number, as well as the cause of alarm.

NOTE

Up to four of these red buttons display at one time, so only the four highest-level alarms are indicated in this way.

To access the single patient viewer for the alarming patient, simply use the mouse to click on the red button at the bottom of the display. The display rearranges to accommodate the single patient viewer at the bottom of the display, and all the patient's information is available to you.

Viewing PDS Data For a Discharged Patient

If you would like to view PDS data for a discharged patient, follow the steps outlined below (PDS must have collected data for that patient previously):

1. Re-admit the patient to an open CIC Pro slot using a spare monitor. The patient does not need to be connected to the monitor. Note that the correct patient ID for the patient must be entered.
2. Go to the Graphic Trends, Vital Signs or Alarm History tabs to view the patient's previous data from the PDS server.
3. Discharge the spare monitor when you are done viewing the data.

For your notes

8 Alarm Histories

For your notes

Alarm Histories

A patient's arrhythmia events can be reviewed, printed, and deleted from within the *Alarm Histories* tab sheet at the CIC Pro. Within this tab sheet, a directory of all stored events is shown, along with a graphic representation of those events. "All stored events" comprise only arrhythmia events which have alarm levels set at crisis, warning, or advisory.

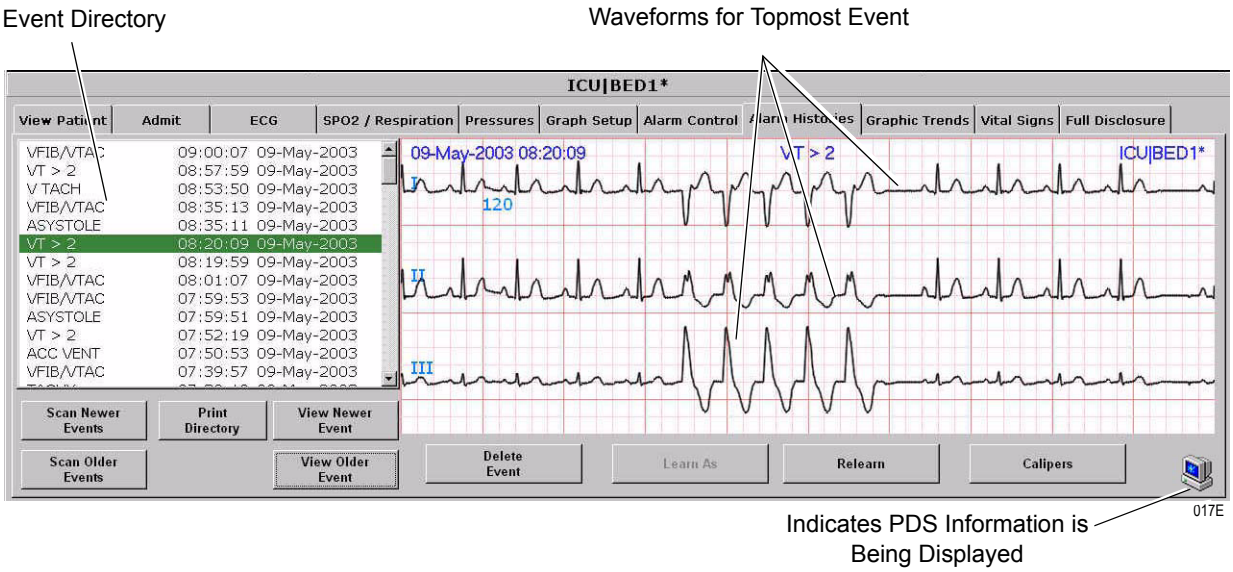
After you select the *Alarm Histories* tab, the topmost highlighted event in the event directory corresponds with the currently shown graphic event representation.

CAUTION
MEASURING DATA STORED IN ALARM HISTORY—Waveform data is stored in the alarm history using compression technology that may not allow perfect reconstruction of the waveform data when subsequently viewed. Although differences occur relatively infrequently and are usually very minor, users are urged to verify diagnostic waveform measurements with the waveform data from realtime graph strips.

Alarm Histories uses the Time Focus feature. For more information on Time Focus, see "Time Focus" on page 1-26.

To view a patient's alarm histories:

1. Click on the desired patient's information in the multiple patient viewer. The single patient viewer for that patient opens.
2. Click on the *Alarm Histories* tab in the single patient viewer. The *Alarm Histories* tab sheet moves to the front.



Alarm Histories Tab Sheet

3. Use the control buttons (described in the following section) to view alarm history events, or click on an entry in the event directory to display the waveforms for that event.

Alarm Histories Controls

Data Source

This option allows the user to select the specific data source from which historical patient data can be retrieved (option not shown on figure, refer to "Data Source" on page 1-25).

Scan Newer Events

Select *Scan Newer Events* to scan newer event waveforms. This option toggles to *Stop* when a scan is in process. You can also select *Scan Older Events* while the scan is in progress to reverse the scanning direction.

When the most recent event is displayed, the scan automatically halts, and the label on this button dims.

Scan Older Events

Select *Scan Older Events* to scan older event waveforms. This option toggles to *Stop* when a scan is in process. You can also select *Scan Newer Events* while the scan is in progress to reverse the scanning direction.

When the oldest event is displayed, the scan automatically halts, and the label on this button dims.

Print Directory

Select *Print Directory* to initiate a printout of the event directory.

View Newer Events

Select *View Newer Event* to view the newer event waveforms (if any). When the most recent event is displayed, the label on this button will be dimmed.

If you would like to print this event, press the *Print* button in the Main Menu.

View Older Event

Select *View Older Event* to view the next older event waveforms (if any). When the oldest event is displayed, the label on this button will be dimmed.

If you would like to print this event, press the *Print* button in the Main Menu.

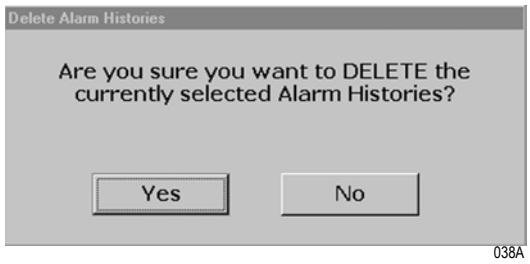
Delete Event

Select *Delete Event* to delete the event currently displayed (and correspondingly highlighted in the event directory). If only one event was highlighted in the event directory, selecting *Delete Event* deletes it immediately.

NOTE

Selecting *Delete Event* at the clinical information center deletes the currently displayed event from the corresponding bedside monitor or telemetry tower in addition to deleting it from the clinical information center.

To delete more than one event, hold the shift key down and highlight all of the events you wish to delete. If more than one event was highlighted in the event directory, a popup menu opens.



Delete Alarm Histories Popup Window

Select *Yes* to delete the highlighted events, or *No* to cancel the request.

Learn As

The *Learn As* feature is active for telemetry patients only. Select *Learn As* to tell the arrhythmia algorithm the telemetry patient is in a "normal" rhythm for that patient and you are not concerned about the rhythm. This changes the name of the arrhythmia call on the template in the alarm history, and the new name displays with an "*---*" to indicate it is renamed.

NOTE

If a call name is changed via this option, it only applies to subsequent occurrences of this call. IT DOES NOT CHANGE THE NAMES OF CALLS STORED IN HISTORY BEFORE THE CHANGE WAS MADE.

Once Learn As is used for an active template, the arrhythmia algorithm adheres to that change.

WARNING

Do NOT use the *Learn As* feature for rhythms that include true ventricular beats in the 10-second history. This could affect the ventricular template depending on its relation to the beats involved in the arrhythmia call.

The following rhythm categories allow user feedback to reclassify arrhythmia calls:

Category	Description	Limitations
NORMAL	Used when the patient is normally in a paced rhythm and then has an early and wide beat or rhythm that is the patient's normal rhythm.	Disallowed when the heart rate of the ventricular beats exceeds the high heart rate limit.
ABERRANT	Used when the system is alarming as a VTach or Accelerated Ventricular arrhythmia. The rhythm is most likely a bundle branch block.	Disallowed when the heart rate of the ventricular beats exceeds the high heart rate limit.
AFIB (Atrial Fibrillation)	Used when the system is alarming for VT > 2.	

NOTE

This feature does not correct noise-related arrhythmia calls. Address noise-related arrhythmia calls with proper skin preparation and electrode placement.

Relearn

Select *Relearn* to tell the bedside monitor of the viewed bed to relearn the current ECG morphology and clear all templates. When all of the templates are cleared, all renamed calls revert to their original names, and the Learn As intervention is nullified.

Calipers

The *Calipers* option is described in detail in "Calipers" on page 11-14.

PDS Icon

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The PDS (Patient Data Server) icon indicates that information is being provided by the PDS server and is available to be viewed on the *Alarm Histories* tab sheet.

If this icon does not appear in the lower right corner of the *Alarm Histories* tab sheet, it could mean two things:

- ThePDS server is not available for retrieving patient information, or
- No PDS information has been archived to the PDS server for this patient.

Printing Alarm Histories

To print a viewed alarm history, click on *Print* in the Main Menu.

Select *Print Directory* to initiate a printout of the event directory.

For your notes

9 Graphic Trends

For your notes

Graphic Trends

Upon admission, a history of the patient's vital signs is continually collected, to hold a maximum of 24 hours of data. After 24 hours have elapsed, the oldest data is deleted to accommodate newer trend data.

NOTE

When the PDS server is active for a bed, 72 hours of patient data is collected.

You can view the trended vital signs data in a graphic format at the clinical information center by using the *Graphic Trends* feature.

The CIC Pro retrieves every non-episodic parameter at one-minute resolution from the patient monitor. These values are displayed at one-minute resolution. Episodic parameters (NBP, etc.) are retrieved every time one occurs. If more than one episodic event occurs during the same minute, the more recent event overwrites the earlier one.

You cannot change any graphic trends values, but you can use the controls to view all the collected data. You can view graphic trends in varying time scales and print them to a laser printer or Direct Digital Writer.

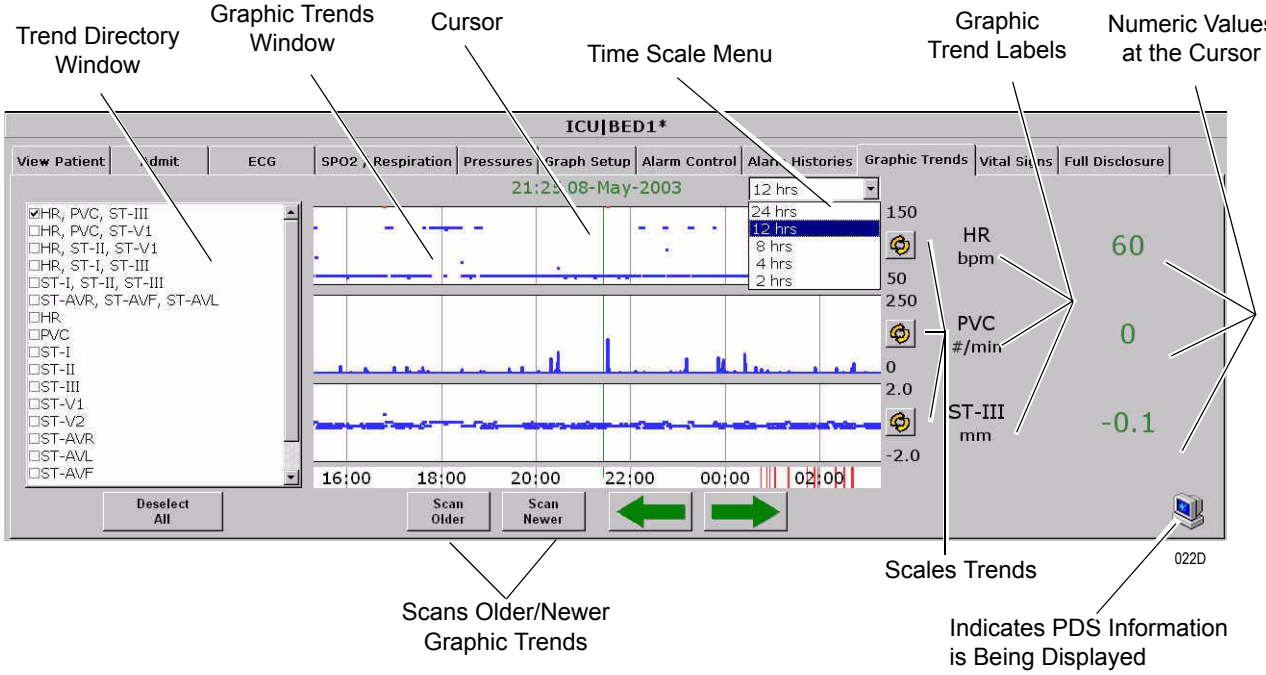
Graphic Trends Tab Sheet

The graphic trends tab sheet contains a window to display patient data trends in graphic form and trend directory window of preset trend combinations for display.

Graphic Trends uses the Time Focus feature. For more information on Time Focus, see "Time Focus" on page 1-26.

To view a patient's graphic trends:

1. Click on the desired patient's information in the multiple patient viewer. The single patient viewer for that patient opens.
2. Click on the *Graphic Trends* tab in the single patient viewer. The *Graphic Trends* tab sheet moves to the front.



Graphic Trends Tab Sheet

Graphic Trends Controls

Data Source

This option allows the user to select the specific data source from which historical patient data can be retrieved (option not shown on figure, refer to "Data Source" on page 1-25).

Trend Directory Window

Up to three graphic trend plots can display in the *Graphic Trends* window at a time. You can select from preset groupings of trends, or select from individually available trends.

To select the trends for display in the *Graphic Trends* window, click on a preset trend grouping or individual trends (up to three). When selected, a check appears in the box to the left of the label.

Graphic Trends Window

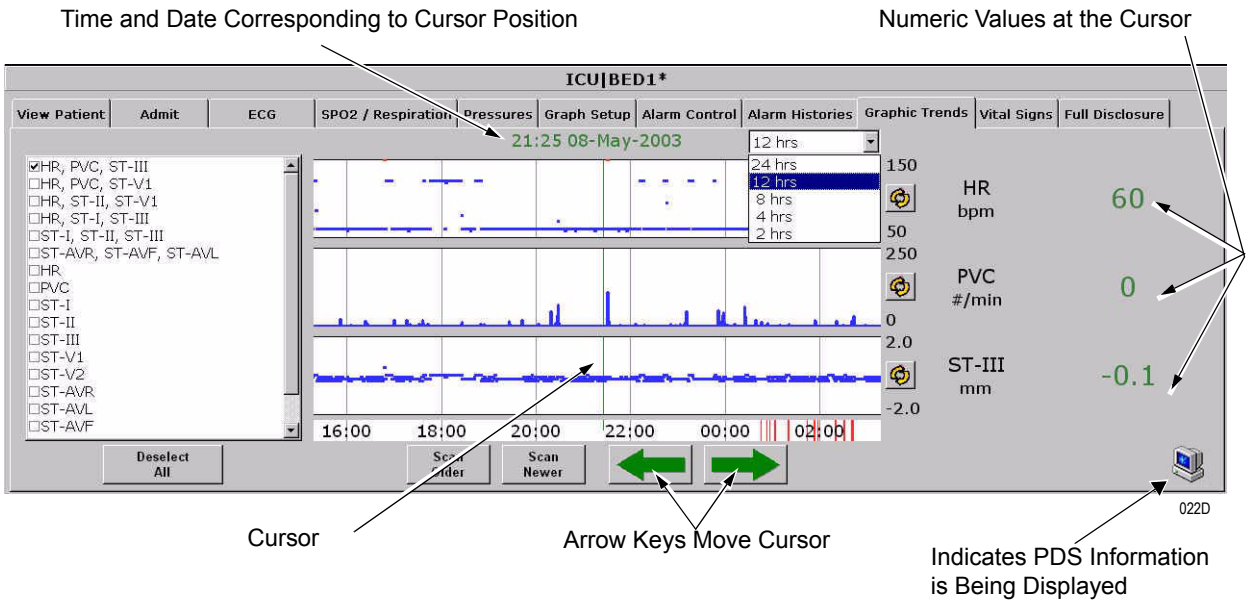
This option displays the selected graphic trends in blue.

NOTE

Data points that go off the scale are shown at the graticule limit in red, not in the normal green.

Cursor

One-minute median values can be accessed through the use of a cursor at the clinical information center.



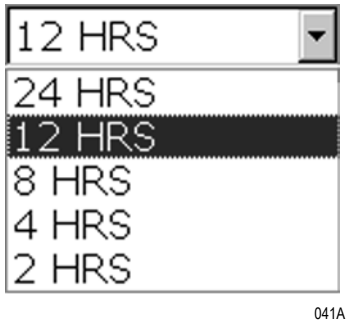
Graphic Trends Tab Sheet with Cursor

- The default cursor location is at the current time when entering the *Graphic Trends* tab sheet.
- You can move the cursor to any median value and review the actual numeric data.
- The cursor is not printed with the graphic trend data.

Time Scale Menu

Within the *Graphic Trends* tab sheet, you can define the amount of trend data (scale) to display in the trend window. This is done via the popup menu located to the right of the time and date.

1. Click the mouse pointer on the down arrow to display all of the time options.



Time Scale Menu

2. Click the mouse pointer on the desired time resolution.

   The time scale menu closes, with the selected resolution remaining visible. The selected time scale is also reflected immediately in the Graphic Trends Window.

Deselect All

The *Deselect All* button clears all trends from the Graphic Trends window. Also, selecting this option removes any checks from the Trend Directory window.

Scan Older

The *Scan Older* button scans older trend data. When pressed, the scan begins and older trend data scrolls across the display.

This option changes to *Stop* when a scan is in process. You can also select *Scan Newer* to reverse the scanning direction. When the oldest event is displayed, the scan automatically halts, and the label on this button grays out.

Scan Newer

The *Scan Newer* button scans newer trend data. When pressed, the scan begins and newer trend data scrolls across the display.

This option changes to *Stop* when a scan is in process. You can also select *Scan Older Events* to reverse the scanning direction. When the most recent event is displayed, the scan automatically halts, and the label on this button grays out.

Arrow Buttons

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The arrow buttons on the *Graphic Trends* tab sheet allow you to move the cursor one minute to the left or right.

Using the left arrow moves the cursor one minute in the "older" direction. When the oldest (least recent) event is displayed, the left arrow is dimmed.

Using the right arrow moves the cursor one minute in the "newer" direction. When the newest (most recent) event is displayed, the right arrow is dimmed.

Scalable Trends Key

431A

The Scalable Trends keys allow you to adjust the graphic trend plots. Selecting this key will scale the trend up or down in preset increments. For example, the preset scales for HR are:

- 50–150
- 0–100
- 100–200
- 0–250

PDS Icon

087A

The PDS (Patient Data Server) icon indicates that information is being provided by the PDS server and is available to be viewed on the *Graphic Trends* tab sheet.

If this icon does not appear in the lower right corner of the *Graphic Trends* tab sheet, it could mean two things:

- The PDS server is not available for retrieving patient information, or
- No PDS information has been archived to the PDS server for this patient.

Printing Graphic Trends

Displayed trends can be printed using the same time scale as the display. To print a graphic trend, select the *Print* button in the Main Menu.

You can print graphic trend printouts for telemetry patients to a laser printer or to a direct digital writer.

For bedside monitor patients, graphic trend printouts initiated from a clinical information center print only to a laser printer. If the graphic trend printout initiates from a patient's bedside, it can print to a direct digital writer or to a laser printer (depending on how the print functions are configured on the bedside monitor).

For your notes

10 Vital Signs

For your notes

Vital Signs

Upon admission, a history of the patient's vital signs is continually collected. You can view the trended vital signs data in a tabular format at the CICP Pro by using the *Vital Signs* feature.

The CIC Pro samples every non-episodic parameter every two seconds. A median value is determined and stored for display at one-minute resolution. Episodic parameters (NBP, etc.) are stored every time one occurs. If more than one episodic event occurs during the same minute, the more recent event overwrites the earlier one.

You cannot change any vital signs values, but you can use the controls to view all the data collected.

You can view these vital signs in varying time scales and print them to a connected laser printer or a Direct Digital Writer. For more information, refer to "Printing Vital Signs" on page 10-6.

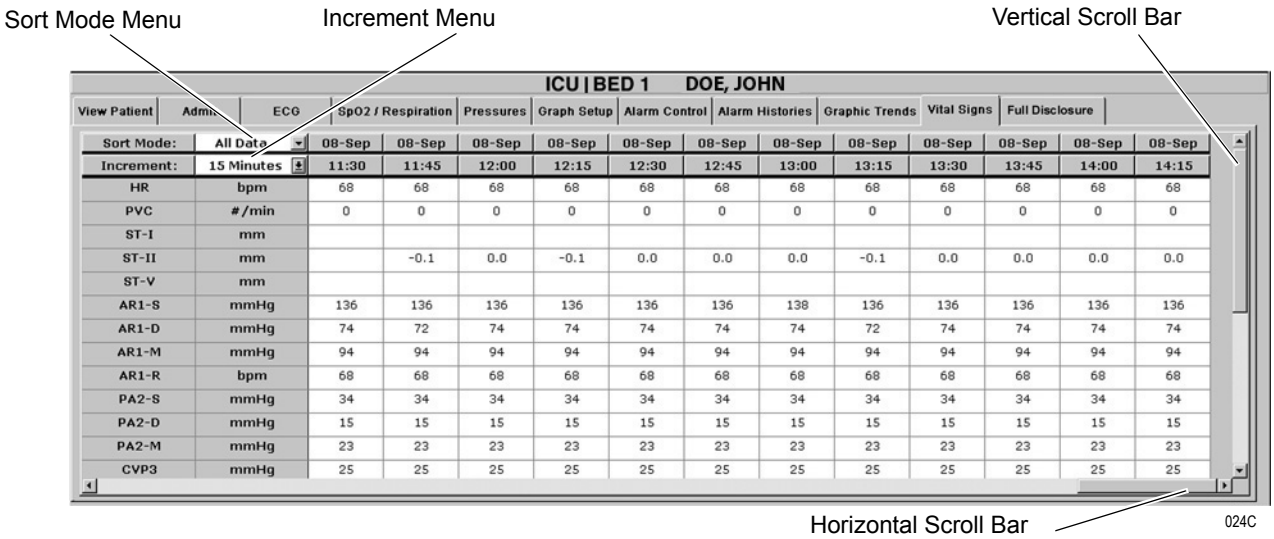
Vital Signs Tab Sheet

The *Vital Signs* tab sheet displays periodic and episodic trend data in tabular, or spreadsheet, form.

Vital Signs uses the Time Focus feature. For more information on Time Focus, see "Time Focus" on page 1-26.

To view a patient's vital signs:

1. Click in the desired patient's bed window in the multiple patient viewer. The single patient viewer for that patient opens.
2. Click on the *Vital Signs* tab in the single patient viewer. The *Vital Signs* tab sheet moves to the front.



Vital Signs Tab Sheet

Vital Signs Controls

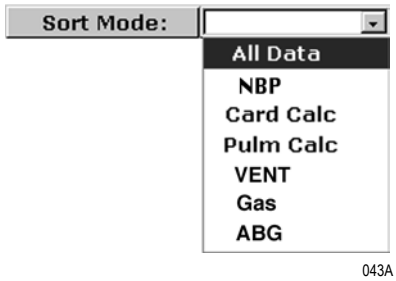
Data Source

This option allows the user to select the specific data source from which historical patient data can be retrieved (option not shown on figure, refer to "Data Source" on page 1-25).

Sort Mode

You can display vital signs in different orders. Within the *Vital Signs* tab sheet, you can define the sort order for the *Vital Signs* window. Do this from the *Sort Mode* popup menu in the upper left corner of the *Vital Signs* tab sheet.

1. Click on the down arrow to display all of the sort options.



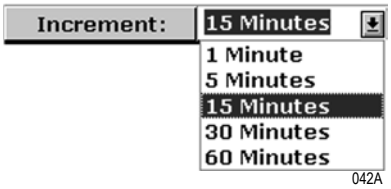
Sort Mode Popup Menu

2. Click the desired *Sort Mode*. The *Sort Mode* menu closes and displays the selected *Sort Mode*. The *Sort Mode* also appears immediately in the *Vital Signs* window.

Increment

Within the *Vital Signs* tab sheet, you can define the amount of data (resolution) to display in the vital signs window. Do this from the *Increment* popup menu in the upper left corner of the *Vital Signs* tab sheet.

1. Click on the down arrow to display all of the *Increment* options.



Increment Popup Menu

2. Click on the desired *Increment*. The *Increment* menu closes and displays the selected *Increment* remaining visible. The *Increment* also appears immediately in the *Vital Signs* window.

Scroll Bars

If all of the vital signs data do not fit into the available display space, use the scroll bars to navigate among columns and rows of data. For more information on using scroll bars, refer to Chapter 1, "The Basics".

Printing Vital Signs

In order to print *Vital Signs* information displayed from a bedside monitor, the CIC Pro must connect to a laser printer. If there is no connected laser printer, the vital signs are for review only at the CIC Pro, and must print from the bedside monitor.

When a telemetry patient's vital signs are printed to a Direct Digital Writer, the anchor column (right-most column) and four additional columns print, based on the time interval selected.

Printed data may be delayed by one minute from the displayed data due to time of request and update of trend files.

NOTE

All data prints do not include calculations. To print pulmonary or cardiac calculations, sort the data, then select the *Print* button in the Main Menu.

11 Full Disclosure

For your notes

Full Disclosure

Upon admission, a history of the patient's waveforms and vital signs is continually collected, to hold a maximum of 72 hours of data. After 72 hours have elapsed, the oldest data is deleted to accommodate newer patient data.

NOTE

The amount of full disclosure data stored is determined by the number of full disclosure licenses purchased by your institution. One hour of full disclosure data storage is standard without additional licensing.

This accumulated patient data can be viewed in a graphic format at the clinical information center by using the *Full Disclosure* feature.

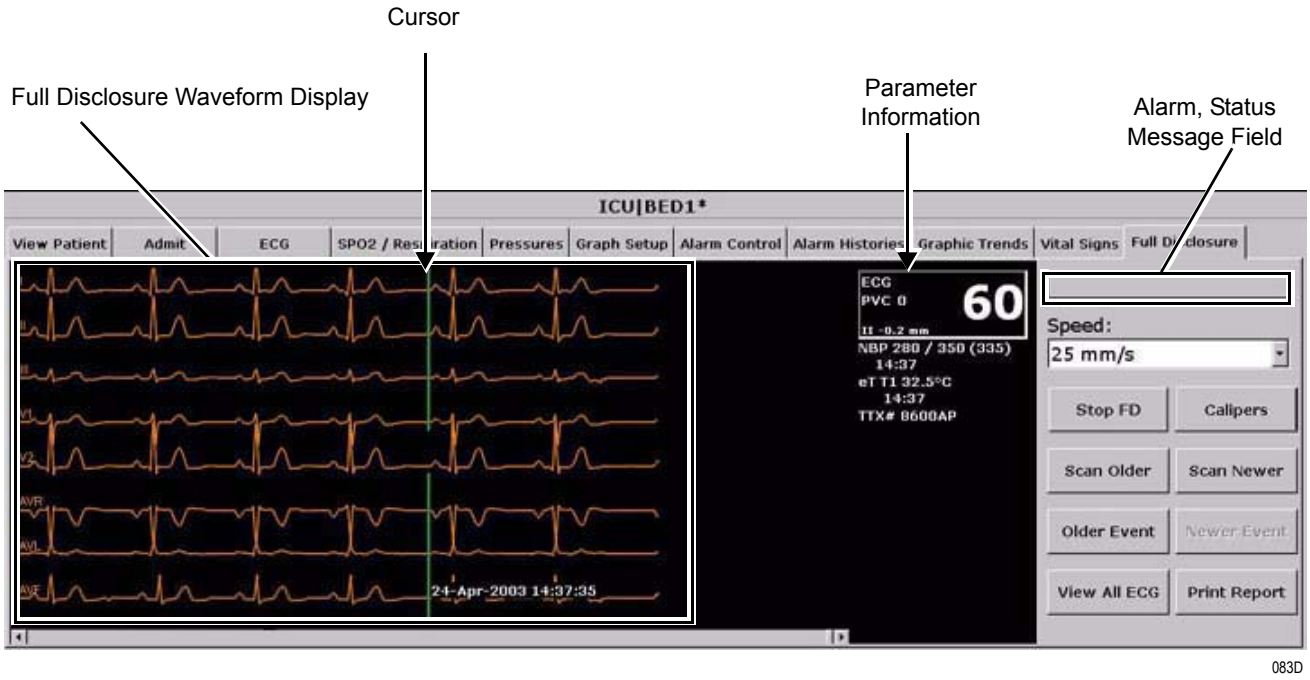
You cannot change any full disclosure information, but you can use the controls to view all the data collected. Graphic trends can be viewed in varying time scales and can be printed to a laser printer.

Full Disclosure Tab Sheet

The *Full Disclosure* tab sheet contains a window to display patient waveforms and parameter information. Full Disclosure uses the Time Focus feature. For more information on Time Focus, see "Time Focus" on page 1-26.

To view a patient's full disclosure information:

1. Click on the desired patient's information in the multiple patient viewer. The single patient viewer for that patient opens.
2. Click on the *Full Disclosure* tab in the single patient viewer. The *Full Disclosure* tab sheet moves to the front.



Full Disclosure Tab Sheet

NOTE

Many Full Disclosure defaults are configurable by the user. To set up the Full Disclosure defaults, see "Full Disclosure Defaults" on page 4-23.

Full Disclosure Window

Full Disclosure Waveform Display

The full disclosure waveform display allows you to view a patient's accumulated waveforms for a set period of time. You can set displayed waveforms to either *Monitor* to display all waveforms displayed on the patient monitor acquiring the data or to *View All ECG* to display all available ECG leads.

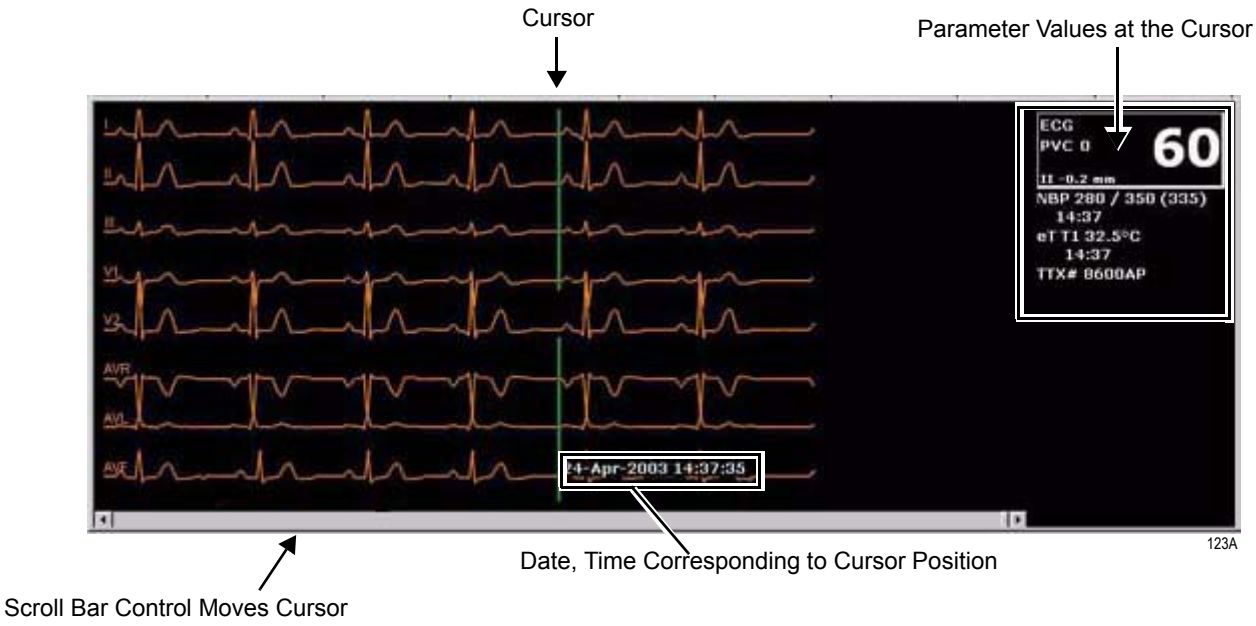
Cursor

The full disclosure cursor denotes the currently viewed position on the waveform display. Move the cursor using the scroll bar control or clicking the mouse pointer directly on the waveform display.

NOTE

The cursor is NOT "click-and-drag" but is "click-and-click." Click on the cursor, release the mouse button, then click where you want the cursor to move.

- The default cursor location is at the current time when entering the *Full Disclosure* tab sheet from the Multi-Patient Viewer.
- The scroll bar control moves the cursor in preset increments.
- Clicking the mouse pointer directly on the waveform display "jumps" the cursor to that position, allowing quick access to the corresponding numeric information.
- An arrow prints with the full disclosure data strip printout to note the cursor location. This arrow does not print with the full disclosure report.



Full Disclosure Window with Cursor

Parameter Information

The parameter information displayed on the *Full Disclosure* tab sheet reflects the cursor position on the waveform display. Numeric information for all monitored parameters is provided.

Alarm, Status Message Field

Any alarms or patient messages at the cursor time display in this field. When you scan newer and older events, an *End of Full Disclosure* message displays in this field

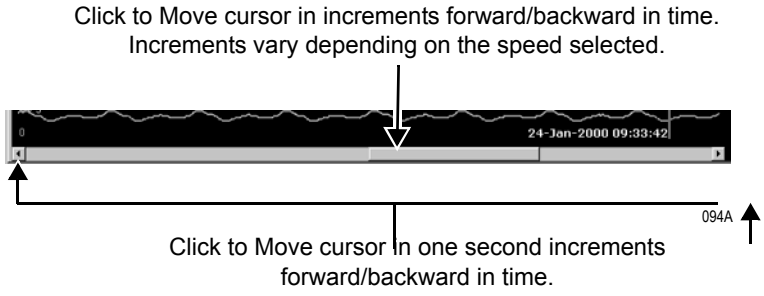
NOTE

Alarm messages display at the time when Full Disclosure receives the alarm, NOT when the message displays on the patient monitor.

Scroll Bar Control

Clicking the arrows on the scroll bar control on the *Full Disclosure* tab sheet moves the displayed data in one second increments.

Clicking inside the scroll bar moves the displayed data in pre-determined increments based on the *Speed* chosen (i.e., if *25 mm/s* is selected for speed, the cursor moves in 8 second increments).


Click to Move cursor in increments forward/backward in time.
Increments vary depending on the speed selected.
0
24-Jan-2000 09:33:42
094A
Click to Move cursor in one second increments
forward/backward in time.

Full Disclosure Controls

Speed

The *Speed* option allows you to set the sweep speed at which you view the full disclosure waveforms.

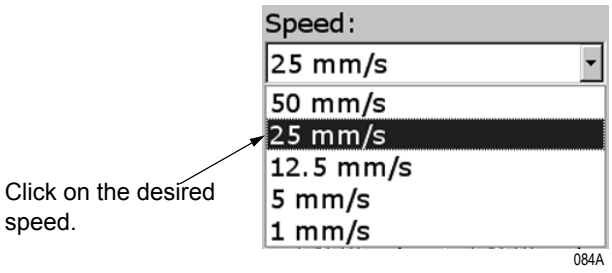
NOTE

The *Speed* chosen sets the pre-determined increments for moving the scroll bar in viewing the displayed data (i.e., if *25 mm/s* is selected for speed, the cursor moves in 8 second increments).

The Full Disclosure menu "grays out" while the waveform speed changes. Because of the amount of data, there is a delay before waveform resumes displaying. Do NOT continue to select the speed while the screen is refreshing.

To set the full disclosure speed:

1. Click on the *Speed* field. A down arrow icon displays next to the current *Speed* setting.
2. Click on the down arrow to display a list of *Speed* selections.



3. Click on the desired speed. The *Speed* menu closes and displays the selected compression setting.

Calipers

The *Calipers* option is described in detail in "Calipers" on page 11-14.

Stop/Start FD

When Full Disclosure is set for *manual* mode, this option stops or starts the Full Disclosure process. If *Stop FD* is selected, the user is prompted, "*Are you sure you want to stop Full Disclosure?"* before Full Disclosure is stopped.

NOTE

When the Full Disclosure mode is set for *automatically if listed* or *automatically for all beds*, the *Stop/Start FD* button is hidden.

Scan Older

The *Scan Older* button scans older full disclosure data. Press to begin scanning older full disclosure data across the display.

This option changes to *Stop* when a scan is in process. When the oldest event is displays, the scan automatically stops.

Scan Newer

The *Scan Newer* button scans newer full disclosure data. Press to begin scanning newer full disclosure data across the display.

This option changes to *Stop* when a scan is in process. When the newest event is displays, the scan automatically stops.

Older Event

The *Older Event* button moves the cursor to a position on the waveform display corresponding to the next older alarm history event. When the oldest event displays, the scan automatically stops, and the label on this button grays out.

NOTE

This option is unavailable if there are no older alarm history events in the full disclosure data.

Newer Event

The *Newer Event* button moves the cursor to a position on the waveform display corresponding to the next most recent alarm history event. When the newest event displays, the scan automatically stops, and the label on this button grays out.

NOTE

This option is unavailable if there are no newer alarm history events in the full disclosure data.

View All ECG/Monitor

This option toggles between *View All ECG* and *Monitor*. The *View All ECG* option displays all ECG waveforms. The *Monitor* option displays all of the waveforms displayed at the bedside at the time of full disclosure.

Print Report

The *Print Report* option is described in detail in "Printing Full Disclosure Information" on page 11-10.

Printing Full Disclosure Information

Print full disclosure information using either:

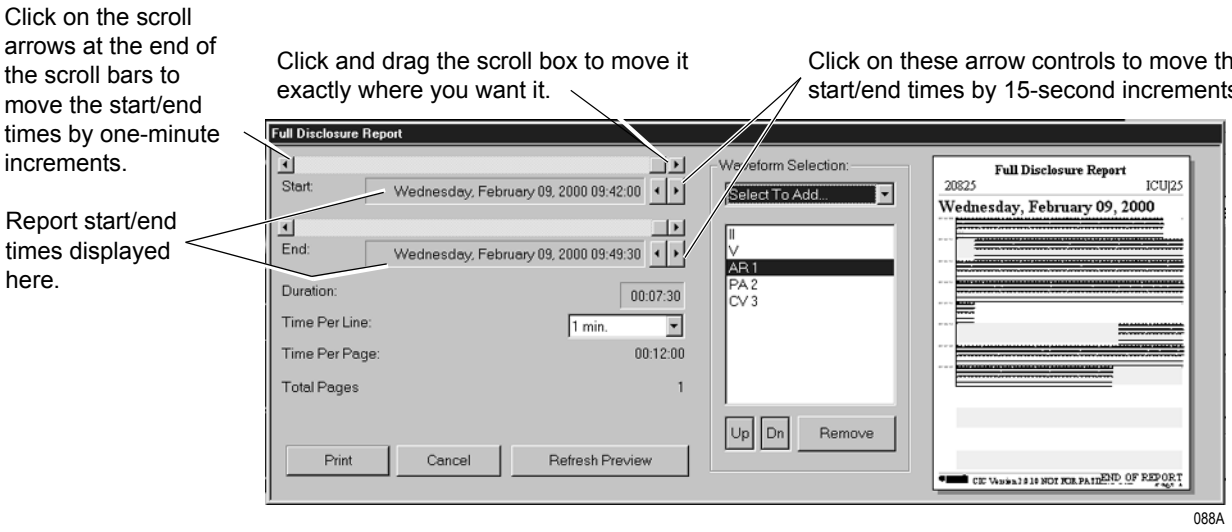
- The *Print Report* option on the *Full Disclosure* tab sheet (report format) or
- The *Print* option in the Main Menu (strip format).

NOTE

Full disclosure information cannot print to a DDW.

Print Report

To initiate a configurable printout of full disclosure information, select *Print Report* on the *Full Disclosure* tab sheet. The *Full Disclosure Report* window opens.



Full Disclosure Report Window

Start/End

Use the scroll bars, or the arrow buttons (15 second increments), to set the duration of the report.

Duration

The duration of the full disclosure report, as configured via the *Start/ End* controls, is displayed in a *hh:mm:ss* format.

Time Per Line

The *Time Per Line:* control allows you to set the amount of data to appear on each line of the full disclosure report. Choices are *1 min., 30 sec.,* and *15 sec.*

Time Per Page, Total Pages

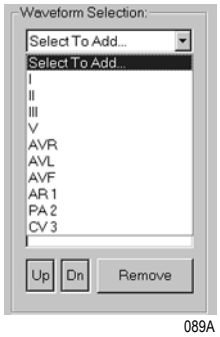
The time per page and the total number of pages in the full disclosure report are shown here. This information reflects configuration of the *Start, End,* and *Time Per Line* controls.

To update the *Total Pages*, click on *Refresh Preview* before you print a report.

Waveform Selection

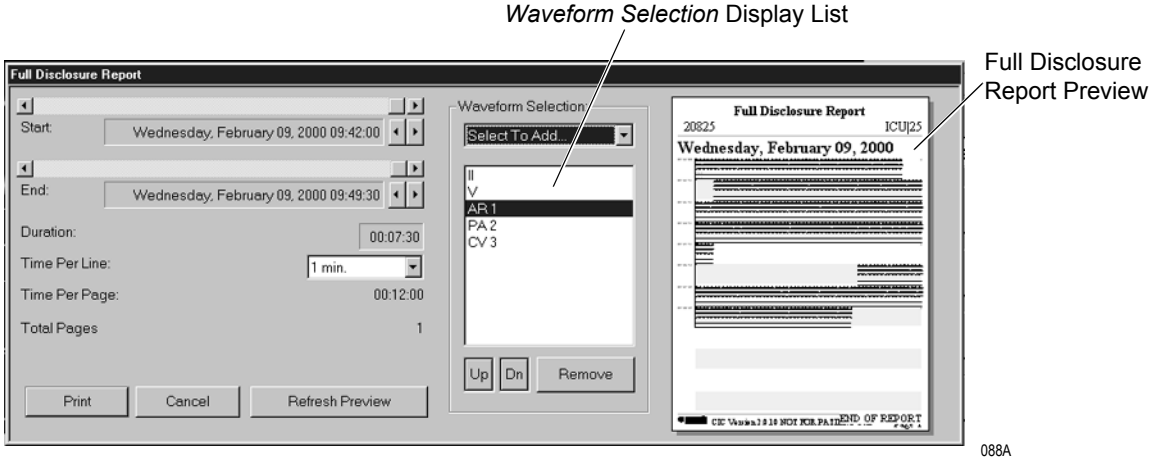
The *Waveform Selection* area of the *Full Disclosure Report* window contains a drop-down list of all available waveforms. All waveforms in the list print by default. To select the waveforms for display in the full disclosure report:

1. Click on the down arrow to display the drop-down list.



Waveform Selection Drop-Down List

2. Click on the waveform label to be excluded from the Full Disclosure report. The drop-down list of waveforms closes, and the remaining waveform(s) display in the *Waveform Selection* display list.
3. Repeat this process until all of the unnecessary waveforms are excluded from the *Waveform Selection* display list.



Full Disclosure Report Window

Up/Dn Control

Use the *Up* or *Dn* buttons to reposition a selected waveform in the *Waveform Selection* display list.

Remove

Use the *Remove* button to remove a selected waveform from the *Waveform Selection* display list.

NOTE

As soon as a change is made to the *Waveform Selection* display list (i.e., added, repositioned, or removed) it is reflected immediately in the full disclosure report preview.

Full Disclosure Report Preview

The Full Disclosure Report Preview is a miniature graphic representation of the full disclosure report. It is updated immediately when waveforms are added, repositioned, or removed from the *Waveform Selection* display list.

Configuration of the print characteristics of full disclosure reports (e.g., turning on/off the graybar feature), refer to "Full Disclosure Defaults" on page 4-23.

Print

Once the full disclosure report is configured satisfactorily, select *Print* to print the report.

Cancel

Select *Cancel* to close the *Full Disclosure Report* window without making changes.

Refresh Preview

Select *Refresh Preview* to "redraw" the full disclosure report preview.

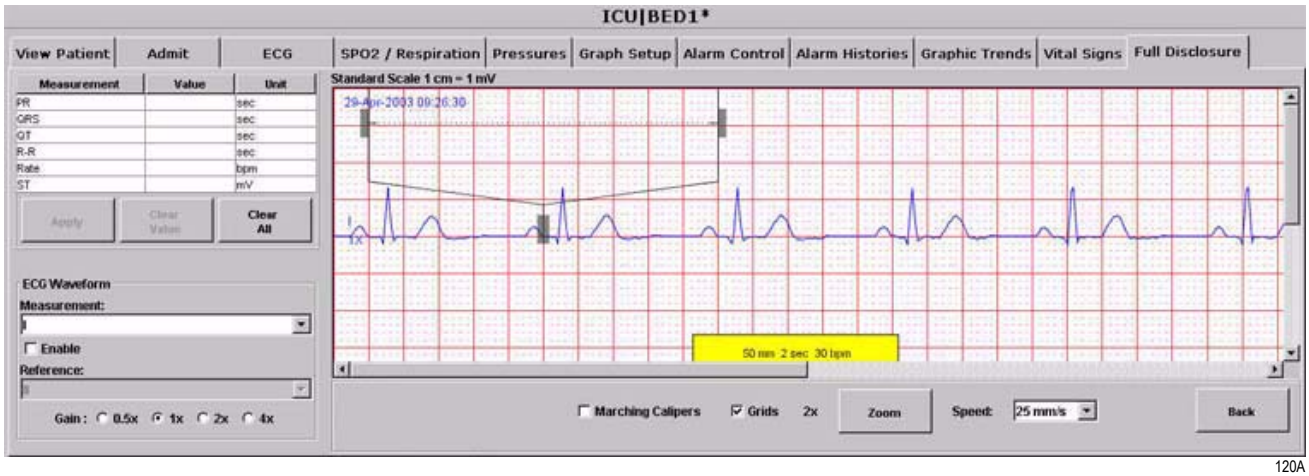
Printing from the Main Menu

When you select *Print* from the Main Menu while viewing full disclosure information, you get a printout of the currently viewed full disclosure information.

Calipers

The calipers feature allows you to take measurements on the ECG waveforms. When selected, this option displays 10 seconds of historical ECG waveform data for the patient.

The *Calipers* control can be found on the *Full Disclosure* or *Alarm Histories* tab sheet. To perform a measurement using the calipers option, click on the *Calipers* control. The Calipers Window opens.



120A

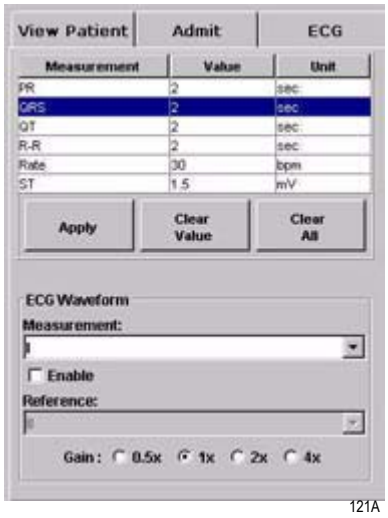
Calipers Window

The left side of the window displays the *Measurement* table. As measurements are made, they are displayed on the table at the selected interval with the unit of measure. The *ECG Waveform* section allows you to select the leads for measurement and reference. The *Gain* for the waveform is also selectable from this side of the window.

The right side of the window displays the waveform and the calipers tool. Controls under this window allow you to enable *Marching Calipers* and *Grids*, *Zoom* in/out of the window, and change the waveform's displayed sweep *Speed*.

Measurement Table

This table displays a list of common waveform measurement intervals. The measurements that can be entered in the measurement table and printing on the caliper report are: PR, QRS, QT, R-R, and ST.



Measurement Table

ECG Waveform

The ECG Waveform control allows you to choose ECG leads for *Measurement* and *Reference*. The choices for *Measurement* leads are: *I, II, III, V AVR, AVL, AVF, and V2*. When the caliper tool is accessed from Alarm Histories, only leads II, III, and V are available for measurement.

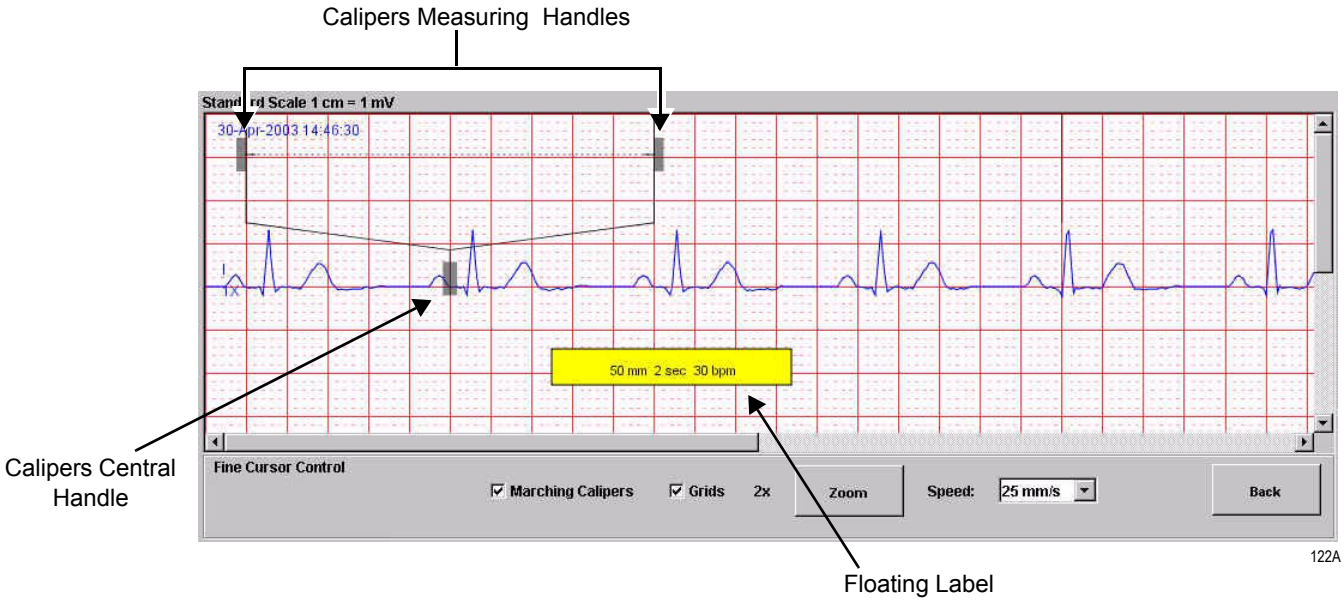
When *Enable* is selected, you can display *Reference* leads. Those choices are: *II, III, V AVR, AVL, AVF, and V2*. These leads are for reference only; therefore, measurements made on the reference waveform components cannot be recorded to the measurement table.

Gain

This control is used to adjust the Gain for the ECG waveforms. Choices are: 0.5x, 1x, 2x, and 4x.

Calipers Measurement Window

This window displays the default ECG waveform and caliper which allow you to measure time intervals and amplitudes for selected displayed waveforms.



Calipers Measurement Window

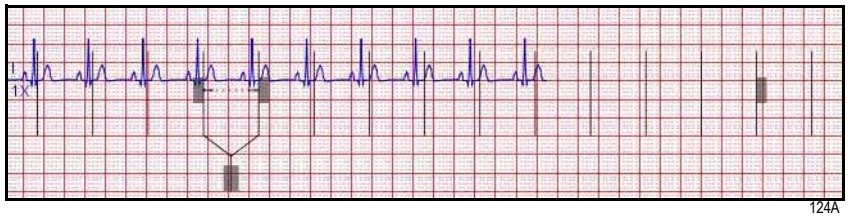
- Use the central handle on the caliper to position it on a desired waveform complex.
- Use the caliper's measuring handles to resize and reposition the caliper arms over the waveform.
- The left and right mouse button also moves the caliper measurement handles.

  1. Position the mouse pointer to where you want to move the right caliper measurement handle.
  2. Right click to move the right caliper handle to where the mouse pointer is positioned.
  3. Now position the mouse pointer to where you want to move the left caliper measurement handle.
  4. Left click to move the left caliper handle to where the mouse pointer is positioned.

Displayed waveforms are labeled with waveform lead, time focus and current gain setting. The calculated measurement is shown on a floating yellow label within the Calipers Measurement Window. You can click on and drag this label to reposition it if desired.

Marching Calipers

This option turns *Marching Calipers* on/off. When on, vertical lines are displayed on both sides of the caliper cursor, at the same intervals as the current caliper span.



Marching Calipers

Marching calipers are used to compare the interval of multiple waveform complexes. To adjust the measurement, use the handles on the caliper or on the marching caliper to increase or decrease the interval. You may have to zoom to 1x size to see the marching calipers handles.

Grids

The *Grids* display mode displays the background grid on the screen. The background grid will print on the calipers measurement page regardless of whether or not grids are turned on. At sweep speeds of 25 millimeters per second, each of the heavy grid lines are 5 millimeters apart.

Zoom In/Out

This option enables you to *Zoom* in and *Zoom* out of the Calipers Measurement Window. This feature may be necessary when using the *Marching Calipers* option or to precisely place the caliper on the waveform. The size options are 1x, 2x, and 3x. The current zoom level is displayed to the left side of the *Zoom* button.

NOTE

Waveforms are always printed at 1X zoom.

Performing a Calipers Measurement

Follow these instructions to measure the complex and display the measurement value on the measurement table:

1. Highlight the measurement to be recorded in the *Measurement* table.
2. Use the calipers measurement handles to align the caliper with the waveform interval you are measuring.
3. Select *Apply* to calculate the measurement and display the unit of measure on the measurement table.
4. Use the *Clear Valu*e key to clear the selected waveform value or the *Clear All* key to clear all values in the Measurement window.

The calipers application calculates the measurement value and units as follows:

- In R-R/Rate measurements, the calipers application calculates measurements in millimeters, seconds and beats-per-minute.
- In ST measurement, the calipers application calculates measurements in millimeters and milli volts.
- For all other measurements, the calipers application calculates measurements in millimeters and seconds.

Speed

The *Speed* option allows you to set the display sweep speed at which the waveform is displayed. Choices are 12.5, 25, and 50 millimeters per second.

To set the sweep speed:

1. Click on the down arrow in the *Speed* field to display a list of *Speed* selections.
2. Click on the desired speed. The *Speed* menu closes and displays the selected setting.

Back

Select this key to close the *Calipers* window and go *Back* to the Full Disclosure tab sheet.

NOTE

Calipers measurements are not saved once the calipers window is closed. To save a hard copy, click the *Print* button at the bottom of the CIC Pro display.

12 Parameter Monitoring

For your notes

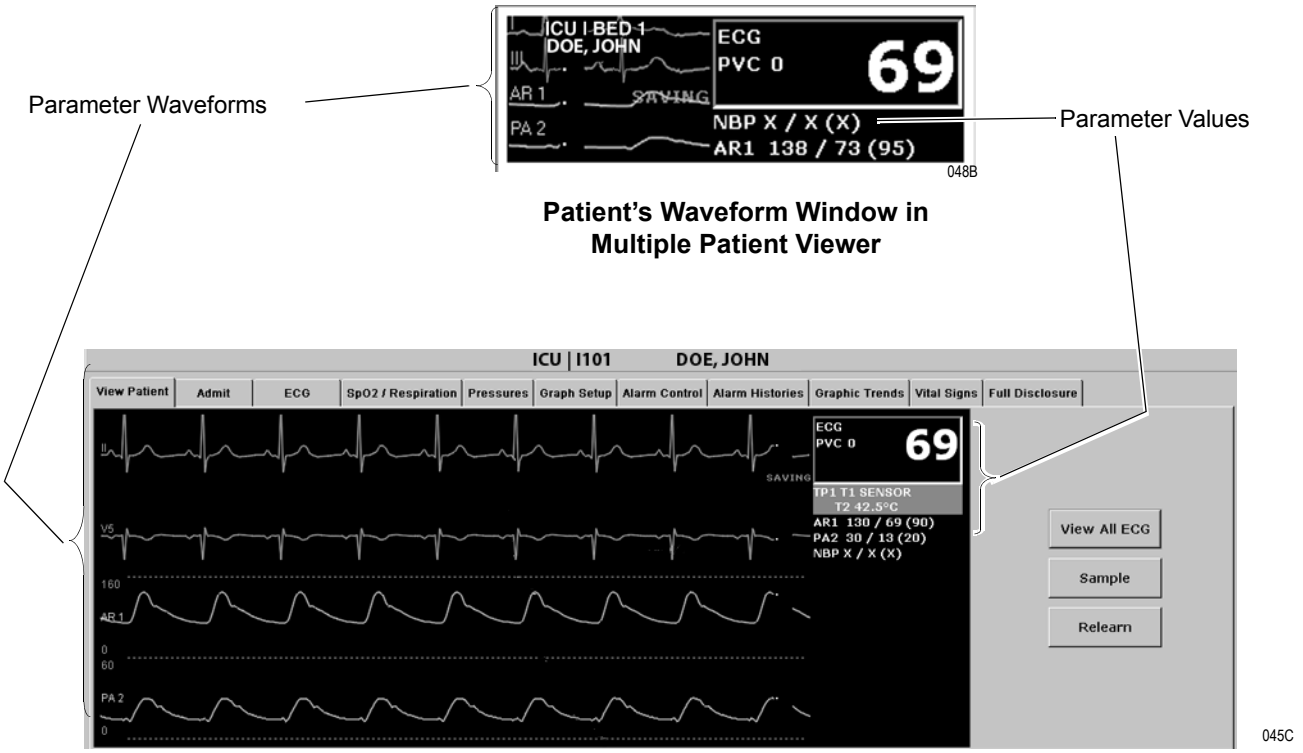
Introduction

NOTE
All changes made to the parameter controls at the clinical information center are also reflected at the bedside monitor.

The parameter monitoring information included in this chapter is a brief overview of how ECG, respiration, SpO_2, and pressure data displays at the CIC Pro. For more in-depth instructions on monitoring these parameters, refer to the appropriate bedside monitor operator's manual.

Within the single patient viewer of the clinical information center, you can view parameter values and limits. For in-unit devices, you can also modify parameter values and limits.

NOTE
For devices viewed from other units, you can view parameter values and limits but you cannot make changes to them.



Patient's Waveform Window in Multiple Patient Viewer

Single Patient Viewer

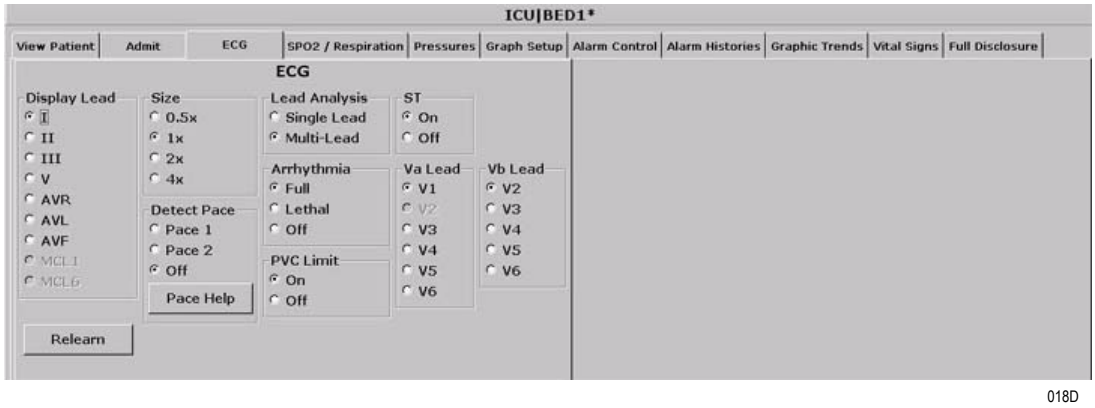
Data Synchronization

Information displayed on the *ECG, SpO2/Respiration,* and *Pressures* tab sheets is synchronized with the source bed every two seconds. If the CIC detects differences the display refreshes with the new information.

ECG Monitoring

The *ECG* tab sheet allows you to view and modify settings specific to the viewed patient's ECG parameter display. To view a patient's *ECG* tab sheet:

1. Click on the desired patient's information in the multiple patient viewer. The single patient viewer for that patient opens.
2. Click on the *ECG* tab in the single patient viewer. The *ECG* tab sheet moves to the front.



ECG Tab Sheet

ECG Controls

The *ECG* controls allow you to view and modify settings specific to the viewed patient's *ECG* information display.

Display Lead

This option enables you to change the lead currently displayed as the primary lead. Click on the *Display Lead* selection.

Size

Click on a *Size* option. This changes the size of all ECG waveforms displayed on the screen.

NOTE

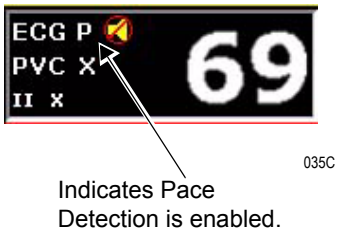
If a size other than *1x* is used, the size displays on the left side of the screen next to the ECG waveform.

Detect Pace

WARNING

PATIENT HAZARD—A pacemaker pulse can be counted as a QRS during asystole in either pace mode. Keep pacemaker patients under close observation.

Pace detection choices are *Pace 1* and *Pace 2*. You can also choose to turn pace detection *Off*. Use the mouse to click on a *Detect Pace* selection.



There are two pacemaker processing modes, *Pace 1* and *Pace 2*. The *Pace 1* and *Pace 2* modes use different algorithms for pacemaker artifact rejection. The clinician must judge which mode is better for each patient. Refer to the appropriate operator's manual for details on these pace modes.

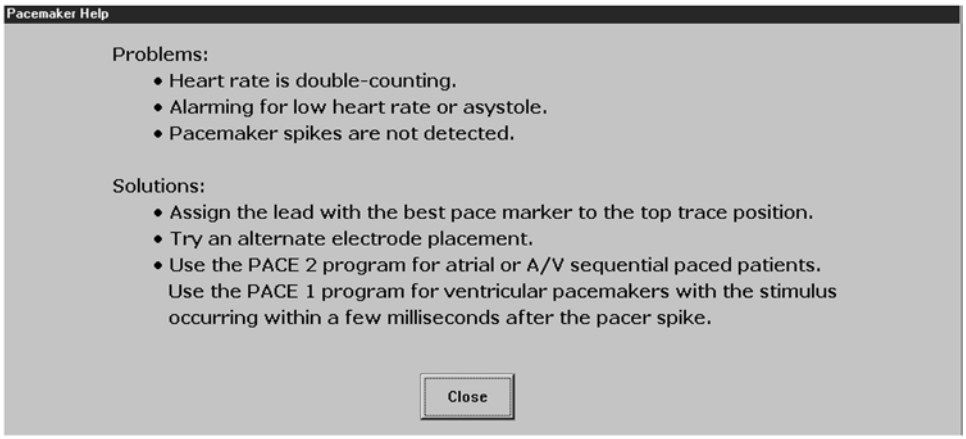
When you enable either pace mode the software places an artificial spike on the waveform whenever the pacemaker triggers. Pacemaker spikes are shown as white segments on ECG waveforms. When pacemaker detection is on, it is indicated by a "P" in the patient's ECG parameter window.

NOTE

Pacemaker spikes do NOT appear in white when using Combo monitoring.

Pace Help

Clicking on the *Pace Help* button opens a window that shows common problems and solutions in regard to pacemaker detection.


Pacemaker Help
Problems:
• Heart rate is double-counting.
• Alarming for low heart rate or asystole.
• Pacemaker spikes are not detected.
Solutions:
• Assign the lead with the best pace marker to the top trace position.
• Try an alternate electrode placement.
• Use the PACE 2 program for atrial or A/V sequential paced patients. Use the PACE 1 program for ventricular pacemakers with the stimulus occurring within a few milliseconds after the pacer spike.
Close
047A

Pacemaker Help Window

Lead Analysis

The *Lead Analysis* control signals the bedside monitor to process the ECG in *Single lead* or *Multi-lead* mode. Click on your selection.

NOTE

In single lead mode, only the display lead processes ECG and arrhythmia information.

Arrhythmia

The *Arrhythmia* control signals the CIC Pro to ignore or accept arrhythmia calls from the bedside monitor. Click on *Full, Lethal* or *Off*.

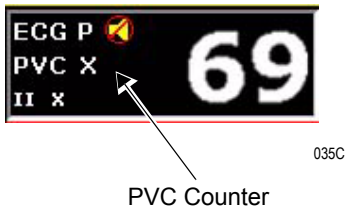
PVC Limit

When on, the *PVC Limit* control displays a PVC counter in the ECG parameter window (shown left). When off, the PVC counter is not displayed in the ECG parameter window. Click the *PVC Limit* control *On* or *Off*.

The PVC limits are preset in *Alarm Control* defaults.

NOTE

PVC Limit is only available if you select *Full Arrhythmia*.



ST

The *ST* control turns ST segment analysis on/off from the display. Click the ST segment analysis *On* or *Off*.

ST: V Lead

This choice list allows you to label the *V Lead* position. Click on your *V Lead* selection.

SpO2/Respiration Monitoring

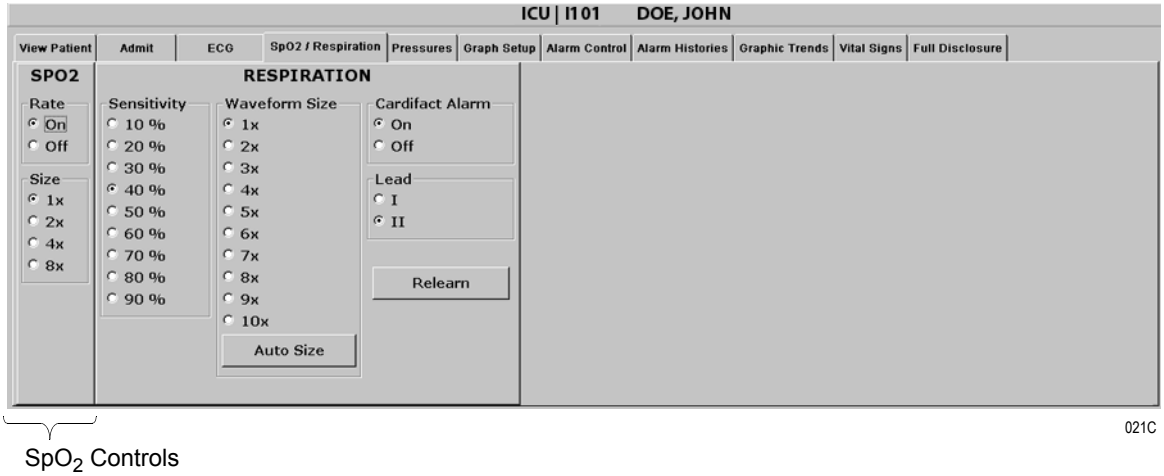
The *SpO2/Respiration* tab sheet provides controls for SpO_2 and respiration monitoring.

To view a patient's *SPO2/Respiration* tab sheet:

1. Click on the desired patient's information in the multiple patient viewer. The single patient viewer for that patient opens.
2. Click on the *SpO2/Respiration* tab in the single patient viewer. The *SpO2/Respiration* tab sheet moves to the front.

SpO_2 Controls

The *SPO2* controls allow you to view and modify settings specific to the pulse rate and waveform size.



SpO2/Respiration Tab Sheet

Rate

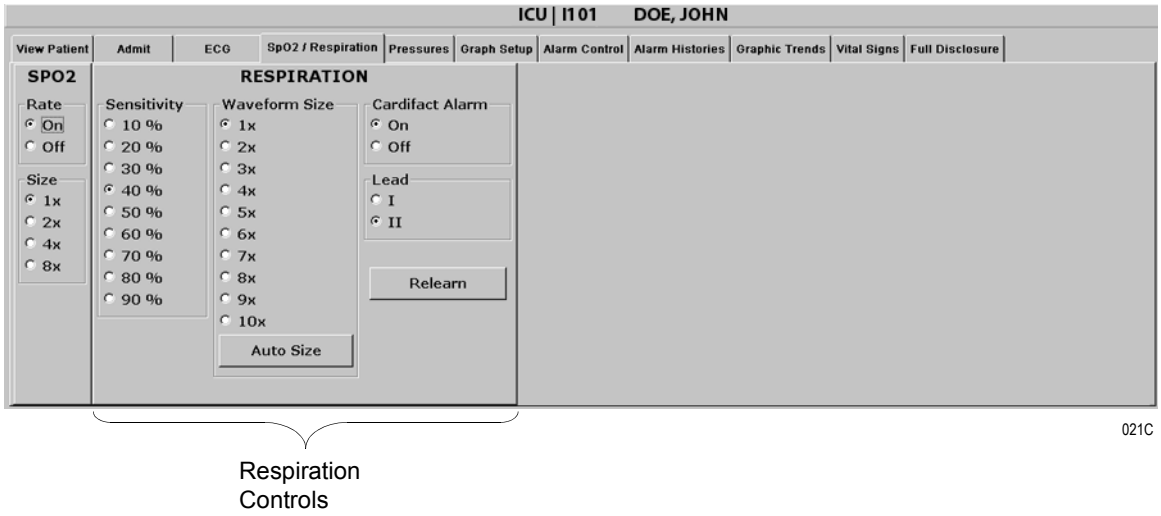
The SpO_2 *Rate* control enables/disables the heart rate from the *SPO2* parameter display. Click *On* or *Off*.

Size

Click on a *Size* option. This changes the display size of the SpO_2 waveform on the screen.

Respiration Controls

The *Respiration* controls allow you to view and modify settings specific to the viewed patient's respiration information display.



SpO_2/Respiration Tab Sheet

Sensitivity

To change the breath detection threshold select the desired sensitivity percentage. To increase the sensitivity, lower the threshold percentage.

Waveform Size

To change the size of the respiration waveform select the desired waveform size.

Auto Size

Select *Auto Size* in the *Waveform Size* control to automatically size the respiration waveform to fit in the available space on the display.

Cardifact Alarm

The cardiac artifact (cardifact) alarm alerts you to the fact that the respiration rate is within 5% of the heart rate (over 30 consecutive breaths). If this happens, the respiration program may be counting heart beat artifact as respiration. The cardiac artifact alarm is an Advisory alarm. *"Cardifact?"* displays in the patient's window in the multiple patient viewer and an advisory alarm sounds.

There is no adjustable limit for this alarm, but you can turn it *Off* or *On*. The default setting is *Off*.

WARNING
If the cardifact alarm is off, apnea events may not be detected.

Lead

There are two choices for the respiration lead—*Lead I* and *Lead II*. Select this menu option to automatically switch the monitored lead for respiration. The label of the lead currently being monitored (*I* or *II*) appears in the menu option, and in the upper left corner of the *Resp* parameter window.

Relearn

The *Relearn* control tells the bedside monitor to relearn the respiration waveform.

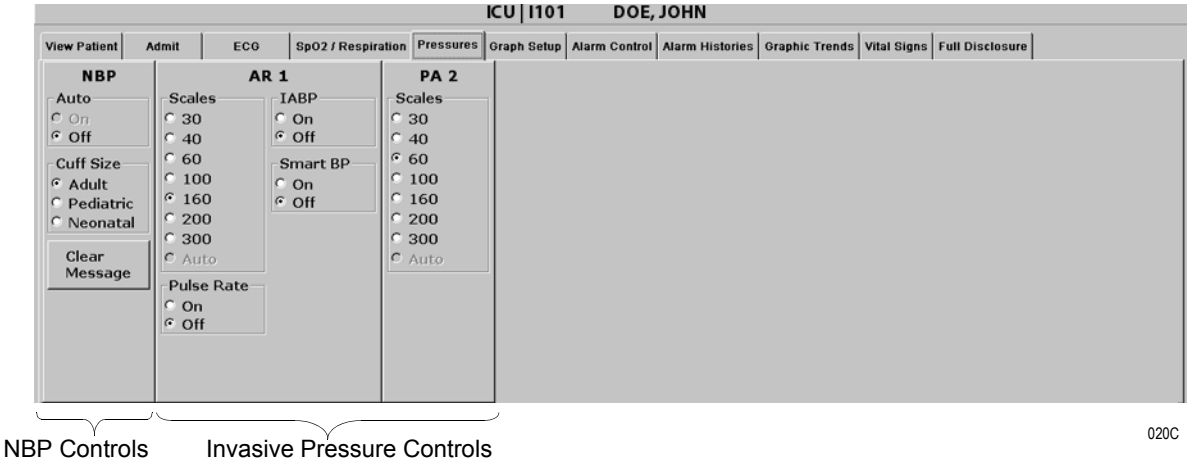
Pressure Monitoring

The *Pressures* tab sheet allows you to view and modify settings specific to the viewed patient's invasive and noninvasive pressure displays.

To view a patient's *Pressures* tab sheet:

1. Click on the desired patient's information in the multiple patient viewer. The single patient viewer for that patient opens.
2. Click on the *Pressures* tab in the single patient viewer. The *Pressures* tab sheet moves to the front.

The *Pressures* tab sheet contains controls for both noninvasive and invasive pressures.



Pressures Tab Sheet

NBP Controls

The *NBP* controls are located in the left-most part of the *Pressures* tab sheet.

Auto

The *Auto* control turns off the Auto NBP program, which initiates NBP readings at regular intervals. If the program is active (it must be turned on from the bedside monitor), *On* is indicated. Select *Off* to deactivate the program.

NOTE

You cannot turn the Auto NBP program on from the CIC Pro.

This control is not active for telemetry patients.

Cuff Size

The cuff size selection changes the algorithm used to calculated NBP. The cuff size option determines the inflation pressure for the first measurement:

Adult, 160 mmHg

Pediatric, 130 mmHg

Neonatal, 100 mmHg

Click on the appropriate cuff size.

NOTE

This control is not active for telemetry patients.

Clear Message

To clear an NBP message from the CIC Pro, select *Clear Message.* The last valid NBP reading displays in the NBP parameter window.

Also, press this button while an NBP reading displays to clear the measurement from the NBP parameter window.

Invasive Pressure Controls

The invasive pressure control area can accommodate controls for up to 10 invasive pressures, depending on the pressure sites.

Site Names

Site names supported and values displayed are:

arterial (AR)—systolic, diastolic, mean and rate

femoral (FE)—systolic, diastolic, mean and rate

umbilical arterial (UA)—systolic, diastolic, mean and rate

pulmonary artery (PA)—systolic, diastolic, and mean

intracranial (IC)—CPP and mean

umbilical venous (UV)—mean

central venous (CV)—mean

left atrial (LA)—mean

right atrial (RA)—mean

special (SP)—mean

Scale

The *Scale* control is a set of radio buttons labeled with scale selections. Click on your scale selection.

NOTE

If the viewed patient's pressures are set to *Full* mode at the bedside, the scale controls at the clinical information center are not active. The scale controls are only active if the viewed patient's pressures are set to *Individual* mode.

Pulse Rate (ART, FEM, and UAC only)

The *Pulse Rate* control displays an arterial pulse rate in the *ART*, *FEM*, or *UAC* parameter windows. No other control panels have this option.

NOTE

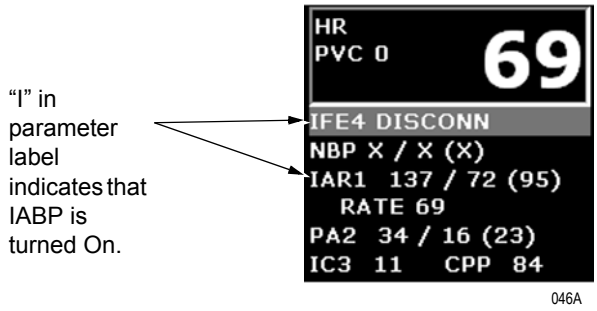
There must be at least a 10 mmHg difference between systolic and diastolic pressures to calculate a pulse rate.

To turn *Pulse Rate* on/off, click on the *Pulse Rate* option from the pressure controls for *ART* or *FEM*. Choices are *On* and *Off*. The default selection for *Pulse Rate* is *On*.

IABP (ART and FEM only)

To turn the *IABP* program on/off, click on the *IABP* option from the pressure controls for *ART* or *FEM*. Choices are *On* and *Off*. The default selection for IABP detect is *Off*.

When on, the parameter label begins with an "I" as shown below.



Smart BP (ART and FEM only)

To turn *Smart BP* on/off, click on the *Smart BP* option from the *Pressures Controls* window for *ART* or *FEM*. Choices are *On* and *Off*. The default selection for *Smart BP* is *Off*.

A Abbreviations and Symbols

For your notes

Abbreviations

Abbreviations and symbols which you may encounter while reading this manual or using the clinical information center are listed below with their meanings.

A

ABG	arterial blood gas
AHA	American Heart Association
AR	arterial
ARRHY	arrhythmia
ART	arterial
AVF	left foot augmented lead
AVL	left arm augmented lead
AVR	right arm augmented lead

B

BP	blood pressure
Btu	British thermal unit

C

C	Celsius
Card Calc	cardiac calculations
CCU	critical care unit
CD	coherent digital
CD-ROM	compact disk-read only memory
CDT	coherent digital telemetry
CE	Conformité Européene
CIC	clinical information center
CISPR	International Special Committee on Radio Interference
cm	centimeter

COMM	communication
CPP	cerebral perfusion pressure
CRT	cathode ray tube
CSA	Canadian Standards Association
CV	central venous
CVP	central venous pressure

D

DDW	direct digital writer
DIA	diastolic

E

ECG	electrocardiograph
EEC	European Economic Community
EN	European Norm (European standard)
EMC	electromagnetic compatibility

F

F	Fahrenheit
FE, FEM	femoral

G

GB	gigabyte

H

HRS	hours
Hz	hertz

I

IABP	intra-aortic balloon pump
ICU	intensive care unit
IEC	International Electrotechnical Commission
in	inch
ISO	International Organization for Standardization

L

LA	left arm

M

MAX	maximum
MB	megabyte
MCL	modified chest lead
Mhz	megahertz
mmHg	millimeters of mercury
mm/S	millimeters per second
MSDS	Material Data Safety Specifications

N

NBP	noninvasive blood pressure

O

OEM	original equipment manufacturer
OR	operating room

P

PA	pulmonary artery
PC	personal computer
PDS	patient data server
Pulm Calc	pulmonary calculations
PVC	premature ventricular contraction

Q

QRS	interval of ventricular depolarization

R

RA	right arm
RAM	random access memory
RESP	respiration

S

SP	special
SpO2	arterial oxygen saturation
ST	interval of ventricular repolarization
STD VGA	standard graphics array
SYS	systolic

T

T1	temperature site 1
T2	temperature site 2
Temp, TMP	temperature
TTX	transmitter

U

UA	umbilical artery
UAC	umbilical artery catheter
UL	Underwriters' Laboratories
UV	umbilical venous

V

V-Fib, V-FIB	ventricular fibrillation
VAC	voltage alternating current
VENT	ventilator

Symbols

"	inches
°	degrees
±	plus or minus
–	minus
%	percent

B Supplies

For your notes

Contact Information

To ensure patient safety, use only supplies manufactured or recommended by GE Medical Systems *Information Technologies*. Your local sales representative can provide current supplies lists, or you can contact GE Medical Systems *Information Technologies* Supplies. (Refer to “How to Reach Us” at the front of this manual.)

For your notes

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For your notes

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